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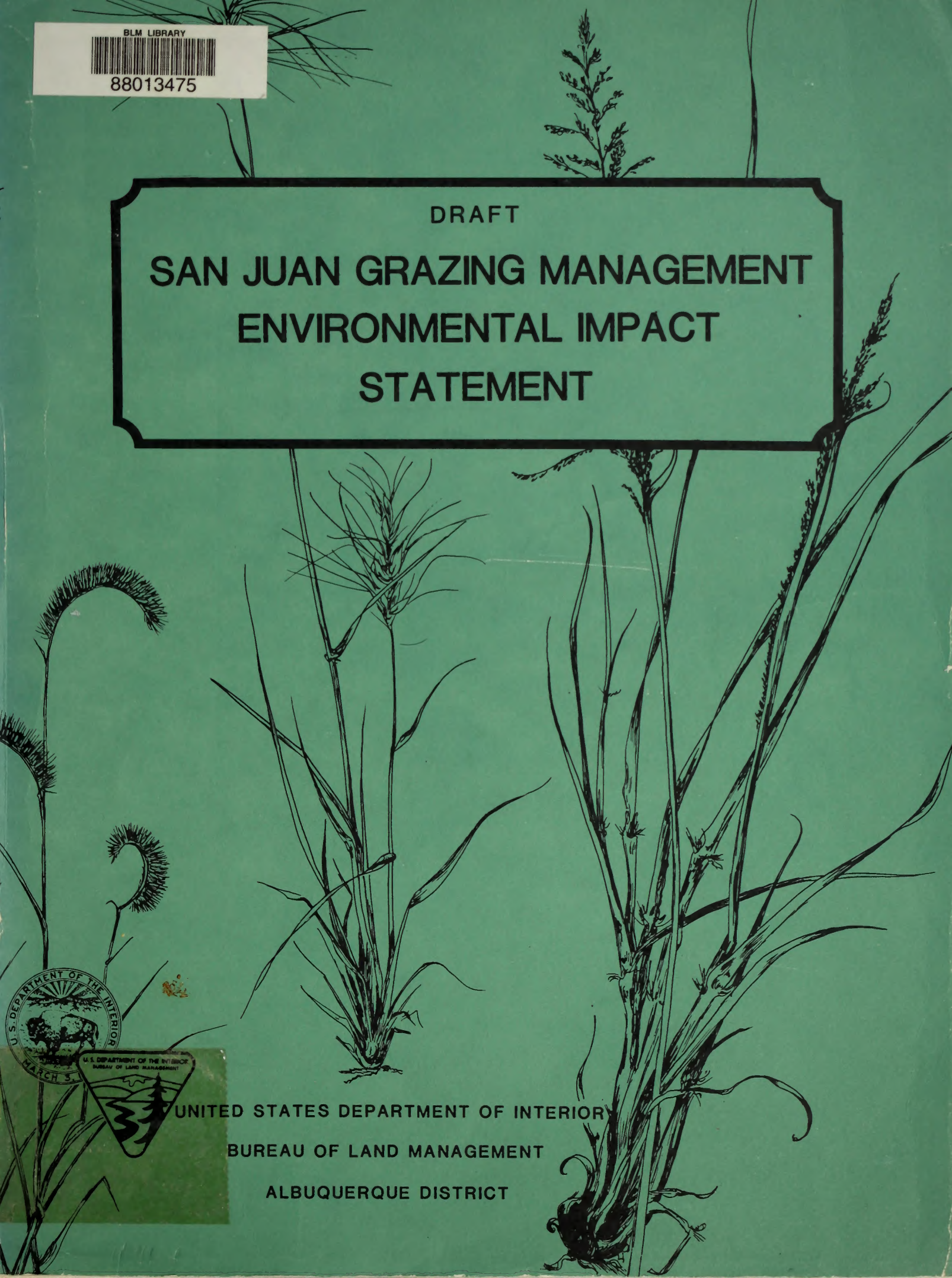

UNITED STATES DEPARTMENT OF INTERIOR

BUREAU OF LAND MANAGEMENT

ALBUQUERQUE DISTRICT

NOTICE

This draft environmental impact statement should be retained to be used in conjunction with the final environmental impact statement. The final statement will incorporate this draft by reference and include modifications and corrections of the draft that are made as a result of public comment. The final statement will also include a record of public comments on this draft and the responses to those comments.

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PRELIMINARY DRAFT
SAN JUAN GRAZING MANAGEMENT
ENVIRONMENTAL IMPACT STATEMENT

Type of Action: (x) Administrative ( ) Legislative

Abstract: The Bureau of Land Management proposes to implement a livestock grazing management program for the San Juan Planning Unit of the Albuquerque District in northern New Mexico. The Planning Unit includes portions of San Juan, Rio Arriba, and Sandoval Counties. This program proposes to allocate vegetation to livestock, big game, and wild horses; determine the levels of livestock grazing management; identify needed livestock support facilities; outline a general implementation schedule; list the standard procedures for operation; and discuss the interrelationships with other programs in the area. A Proposed Action and four alternatives (No Action, Elimination of Livestock Grazing, Maximization of Livestock Forage Production, and Enhancement of Other Resource Values) are considered. A discussion of the affected environment is briefly summarized, and the environmental consequences resulting from the Proposed Action and each alternative are documented in this EIS.

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State Director, New Mexico

SAN JUAN GRAZING MANAGEMENT

ENVIRONMENTAL IMPACT STATEMENT

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SUMMARY

SUMMARY

INTRODUCTION

The Bureau of Land Management (BLM), Albuquerque District, proposes to implement a grazing management program on 926,909 acres of public land within the San Juan Planning Unit of the Farmington Resource Area. A Proposed Action and four alternatives have been developed to improve management in the affected area. The purpose of the Proposed Action is to protect and enhance the vegetation resource which provides the foundation for watershed, livestock forage, forestry products, wildlife and wild horse habitat, recreation and aesthetic values, and socioeconomic values.

Description of the Proposed Action and Alternatives

Proposed Action

The objectives of the Proposed Action are to provide 75,410 AUMs of forage in the short term (69,335 AUMs to livestock, 5,799 AUMs to wildlife, and 276 AUMs to wild horses) and 107,217 AUMs in the long term (90,311 AUMs to livestock, 16,630 AUMs to wildlife, and 276 AUMs to wild horses) for use on a sustained yield basis. Of the 138 allotments in the Planning Unit, 15 with existing Allotment Management Plans (AMPs) would remain unchanged, 2 allotments (1,082 acres of public land) would be eliminated from grazing use, and 121 others would receive more intensive grazing management. A minimum rest period from livestock grazing (April 1 to May 31 and July 15 to September 15) would be required on each of the pastures in each allotment on a rotational basis at least one year out of every three.

Period of use would remain unchanged on 22 allotments. The remaining 114 would require period-of-use modifications to implement the proposed rest period. No change in kind of livestock is proposed.

Construction of range developments and vegetation treatments would be required to implement the Proposed Action. These would include: dirt tanks, pipelines, drinking troughs, wells, storage tanks, spring developments, fences, and cattleguards. Plowing, chaining or seeding of 54,119 total acres of vegetation would occur.

A monitoring program to determine the effects of livestock adjustments (increases or reductions) on plant composition, vigor, and ground cover would be conducted as part of the Proposed Action and all alternatives except the Elimination of Livestock Grazing Alternative.

No Action Alternative

Forage allocations to livestock, wildlife and wild horses would be 71,945 AUMs in the short and long term. Livestock forage allocations would be 66,146 AUMs. This level of use is not expected to change even though a grazing preference of 108,371 AUMs exists. Forage allocations to wildlife would be 5,799 AUMs (same as the short-term allocation under the Proposed Action), and no AUMs would be allocated to wild horses.

The 15 allotments which have been implemented AMPs would be intensively managed, those without AMPs would be managed as at present, and new grazing management systems would not be developed. No new range developments would be constructed, but existing improvements would continue to be maintained.

Elimination of Livestock Grazing Alternative

This alternative would remove livestock from the public lands in order to reserve available forage for wildlife and wild horses, and for the enhancement of watershed and visual resources. The short-term allocation to wildlife would be 5,799 AUMs; 16,630 AUMs would be allocated in the long term. Wild horses would be allocated 420 AUMs in both the short and long terms. In addition, 69,191 AUMs would be reserved for non-consumptive uses including watershed, wildlife habitat, cover, and aesthetics. No new grazing management systems would be developed and those AMPs now implemented would be cancelled. No new range developments would be constructed unless necessary for wildlife or watershed management. Livestock grazing would be limited to state and private lands.

Maximization of Livestock Forage Production Alternative

This alternative would provide an intensive program of range management practices to achieve optimum forage production for livestock. Initial livestock allocations under this alternative would be 69,335 AUMs. Due to increased vegetation treatments (237,584 acres), 106,748 AUMS are anticipated for livestock use in the long term. Wildlife would be allocated 5,799 AUMs in the short term and 16,630 AUMs in the long term. Wild horses would be allocated 276 AUMs in both the short and long terms.

Intensive grazing management would be implemented on all 138 allotments. Present management would continue on the 15 allotments with existing AMPs. Range developments as mentioned in the Proposed Action would also be constructed under this alternative. In addition, chemical treatment would be applied on 25,705 acres to control sagebrush.

Enhancement of Other Resource Values Alternative

This alternative considers a lower level of livestock use than the Proposed Action in order to enhance other resource values. Livestock AUMs on good condition range would remain the same as under the Proposed Action. AUMs on fair and poor condition ranges (1,075,137 acres) would be reduced 50 percent. Livestock forage allocation would be 42,041 AUMs in both the short and long terms.

Forage allocations for wildlife would be 5,799 AUMs in the short term, and 16,630 AUMs in the long term. Wild horse allocations would be 420 AUMs for both the short and long terms. In addition, 27,150 AUMs would be reserved for non-consumptive uses, including watershed, wildlife habitat and cover and aesthetics. Range developments and vegetation treatments would remain the same as those described for the Proposed Action.

Environmental Consequences of the Proposed Action and Alternatives

Proposed Action (PA)

Vegetation would be permanently lost from about 31 acres that would be occupied by the range developments. Vegetation treatments would change 52,639 acres of sagebrush and 1,360 acres of pinyon-juniper to grassland. Cover would decrease from 22 to 16 percent on the sagebrush areas and from 21 to 19 percent on pinyon-juniper areas.

The cover of forage-producing species would increase on about 900,000 acres of the Planning Unit where combinations of rest and grazing reductions were implemented. The overall average increase in total vegetation cover would be less than 1 percent, but increases as high as 7 percent would occur on certain sites. Production of useable forage on public lands would increase about 32,000 AUMs and range condition would improve.

Under the Proposed Action, sediment yield would decrease from 1,654 ac. ft./yr. to 1,316 ac. ft./yr. (a 20 percent reduction in soil loss and erosion). Construction of range developments would cause short term soil disturbances on about 96 acres, and 31 acres would be lost from production. Soil losses on these areas from wind and water erosion would not be significant.

In general, the expected changes in vegetation are not great enough to change existing runoff. Changes may occur on the 54,119 acres proposed for vegetative treatment. Annual livestock watering requirements would increase to 125 acre-feet (a 34 acre-foot increase).

Air quality would not be significantly impacted. Some localized dust emissions would occur during construction of the range developments and vegetation treatments.

Overall, major big-game wildlife species would benefit from increased forage allocations, both in the short and long terms. Competition with livestock would continue to impact antelope in summer ranges and fawning areas. Livestock use before June 15 would result in dietary overlap with cattle and among other species of wildlife. Proposed water developments would ensure a more even distribution of antelope and more equal utilization of forage.

Competition between livestock and deer on browse species would occur in fall and winter. Topographical preferences could reduce competition between deer and livestock except during the winter period when livestock are using deer wintering areas. Water developments would ensure more equal use of forage and even distribution of deer populations in the Planning Unit. Deer habitat would be unchanged.

Elk and Barbary sheep populations would also benefit from the proposed forage allocations. Forage competition between these species and livestock would not increase. Antelope numbers are projected to increase from 186 to 373 head in the long term; deer (yearlong), from 1,286 to 2,591; deer (winter) from 1,691 to 3,416; elk from 40 to 80; and Barbary sheep from 204 to 429.

Non-game species would benefit from the Proposed Action. Overall, competition would decrease due to increased food sources and shelter (cover) types. Scattered riparian habitats would also improve through increased vegetative productivity and protection.

Wild horses would be allocated 276 AUMs in both the short and long terms, (no AUMs are presently allocated for wild horses). Forage competition between wild horses, livestock and wildlife would continue.

Grazing allotment numbers would be reduced from 138 to 136 and operators from 185 to 183. Livestock AUMs would be reduced from preference by 39,036 AUMs in the short term and by 18,060 AUMs in the long term. Average licensed use would be increased by 3,189 AUMs in the short term and by 24,165 AUMs in the long term. One hundred fourteen allotments would be affected by the spring and summer rest requirement one out of three years. During these rest periods, cattle would be relocated to allotment pastures not being rested or to other private or leased lands. Impacts on existing breeding programs and livestock management practices would be minimal.

Timber reproduction would be slowed in the long term due to the proposed grazing deferment. In general, regulated livestock grazing would be more beneficial than no grazing or overgrazing. Impacts to the woodland resource would be negligible.

Recreation activities would be temporarily disrupted on 54,215 acres of public land during construction of the proposed range developments and vegetation treatments. Total visitor-days (consumptive and non-consumptive) are anticipated to increase from 603,001 (existing) to 938,836 visitor-days in the long term. No impacts are anticipated on the five Areas of Critical Environmental Concern (ACECs) under study (12,595 acres).

Knowledge of the cultural resource base would be increased by inventories on 54,215 acres. Excavated sites and sites exposed to chaining and plowing after recordation would be unavailable for future study. Unauthorized collection and vandalism could rise both from easier site identification in treated areas and from increased visitor use. Site damage could also be increased by future increased livestock numbers.

The development of range structures and vegetation treatments would cause short-term visual contrast on 54,215 acres. Through implementation of the standard operating procedures, these impacts would be minimized.

The Proposed Action would have negligible impact on total employment and income in the area. During the short-term, the Proposed Action would increase total livestock sales on all ranches by approximately $27,690 a year and decrease net cash income to ranch operators by approximately $23,615 a year. The decline in total net cash income would occur because of decreases in actual levels of livestock grazing by commercial-size cattle ranches. These ranches earn a greater percentage of return on their operations than do subsistence-size ranches. Short-term benefits from the Proposed Action would go principally to subsistence-size ranches, while short-term cost increases would chiefly accrue to larger operations.

Under the Proposed Action, the net cash income of a typical subsistence cattle ranch of 14 head would rise from the $160 estimated for 1978 to $200 in 1982, a gain of 25 percent. Over the same period, the net cash income of a typical sheep ranch of 25 head would increase from $295

in 1978 to $420 in 1982, a 42.4 percent rise. By contrast, the net cash income of a typical small-size commercial cattle ranch of 112 head would fall by $380, or 17.8 percent, and the income of a typical large-size commercial cattle ranch of 528 head would drop by $5,250, or 18.4 percent. The net cash income of a typical medium-size commercial cattle ranch would be unchanged.

Loan valuation of livestock ranches would be reduced an estimated $1.2 million (18.4 percent). Existing outstanding loans are valued at between $2.2 and $4.6 million. The reduction in loan valuation would occur (even though actual grazing levels would increase overall) because loan values are calculated on the basis of authorized rather than actual grazing levels.

The cumulative effect of the Proposed Action would be to increase total livestock sales from these ranches by $404,700 or 28.5 percent (from $1,418,550 in 1978 to $1,823,250 by year 2000). Net cash income would be increased by 28.2 percent, or $92,620 (from $328,465 in 1978 to $421,085 by year 2000).

Visitor-day recreation use (consumptive and non-consumptive) is anticipated to increase from 594,126 visitor days (existing) to 887,259 visitor-days (long-term). (These visitor use totals do not include upland game hunting or fishing activities.) Values of the visitor-days would increase from $3,755,118 (existing) to $6,287,448 (long-term).

Alternatives

Impacts of the No Action (NA), Elimination of Livestock Grazing (ELG), Maximization of Livestock Forage Production (MLFP), and Enhancement of other Resource Values (EORV) Alternatives are summarized in the following table, along with impacts resulting from the Proposed Action.

SUMMARY OF IMPACTS

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Vegetation							
Production	AUMs produced on public lands	75,410	107,217	76,066	104,458	123,801	107,217
Grassland Aspect							
Sagebrush	Acres		52,639	0	0	129,215	52,639
Pinyon-Juniper	Acres		1,360	0	0	108,249	1,360
Barren	Acres		120	0	0	120	120
Livestock Forage Range Condition							
Good	Acres	203,484	371,721	202,832	328,472	442,422	371,721
Fair	Acres	730,168	673,719	708,051	708,273	626,589	673,719
Poor	Acres	344,969	233,181	367,738	241,876	209,610	233,181
Soils	Acre-feet of sediment yield	1,654	1,316	1,650	1,292	1,351	1,312
Water Resources							
Water Use	Acre-feet		125	91	0	148	58
Decreased Runoff	Acres affected		54,119	0	0	184,477	54,119

SUMMARY OF IMPACTS

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Wildlife							
Pronghorn antelope	Yearlong population in numbers	186	373	186	600	373	540
Muledeer	Yearlong population in numbers	1,286	2,591	1,286	5,500	2,591	4,120
	Winter population in numbers	1,691	3,416	1,691	5,900	3,416	5,420
Elk	Yearlong population in numbers	40	80	40	120	80	110
Barbary sheep	Yearlong population in numbers	204	429	350	700	429	680
Upland game bird habitat (510,000 acres)	Trend of habitat quality	Stable	Improvement on about 140,000 acres of poor-fair quality habitat	Stable - declining	General improvement	Deterioration on about 370,000 acres of good quality habitat	Improvement on about 140,000 acres of poor-fair quality habitat
None-Game species birds habitat (1,429,951 acres)	Trend of habitat quality	Stable	Generally stable-improving	Stable - declining	General improvement	Overall deterioration	Generally stable-improving

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Wildlife (Cont'd)							
Riparian and wetland habitat (4,893 acres)	Trend of habitat quality	Stable - declining	Stable - improving	Stable - declining	Improving	Stable - declining	Improving
Aquatic habitat (189 riverine miles; 17,469 acres of lakes and reservoirs)	Trend of habitat quality	Stable	Stable - improving	Stable - declining	Stable - improving	Stable - declining	Stable - improving
Wild Horses	Number of animals	23	23	23	35	23	35
	Number of animals	23	23	23	35	23	35
Livestock Grazing							
Livestock AUMs (Licensed Use) on Public Lands		66,146					
short-term	AUMs		69,335	66,146	0	69,335	42,041
long-term	AUMs		90,311	66,146	0	106,748	42,041

SUMMARY OF IMPACTS

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Livestock Grazing (Cont'd)							
Allotments	Total Number	138	136	138	0	136	136
	Number - Increased AUMs (Pref./Av. Lic. Use)		26/74	7/0		26/74	5/37
	Number - Decreased AUMs (Pref./Av. Lic. Use)		108/61	131/0	138/138	108/61	131/99
	Number - No change in AUMs (Pref./Av. Lic. Use)		2/1	0/0		2/1	0/0
Forestry							
Timber	Reproduction	Slow decrease	Improvement	Slow decrease	Improvement	Improvement	Improvement
Woodland	Standing volume	Increase	No impact	Increase	Increase	Decrease	No impact
	Future production	Increase	No impact	Increase	Increase	Decrease	No impact
Fire Potential		Increase	Decline	No impact	Increase	Decline	No impact
Recreation	Visitor-days		938,836	919,378	1,008,009	938,836	994,674
	Long-term	603,001					

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Wilderness	Inventory Unit NM-010-090	No impact	No impact	No impact	No impact	No impact	No impact
	Inventory Unit NM-010-091	No impact	No impact	No impact	No impact	No impact	No impact
Land Use	Number of allotments by principal use						
	Grazing	136	136	136	0	136	136
	Other Uses	2	2	2	138	2	2
Cultural Resources							
Increase in Data Base	Acres of class III inventories	1,144 sites on file	54,215	0	Trailing areas	211,975	54,215
Increased Potential for Resource Loss							
Vegetation Treatment	No. of sites damaged or destroyed	Est. basin site density 2-90/sq. mi.	Unknown until inventories and AMPs completed	0	0	Unknown until inventories and AMPs completed	Unknown until inventories and AMPs completed
Unauthorized collection & vandalism	Increase in hunter visitor-days (Year 2000	93% of sites studied in poor to mod. condit.	19,458	0	19,458	88,631	75,296

SUMMARY OF IMPACTS

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Visual Resources	Acres changed to lower class						
Mgmt. Class II		71,498	No change	No change	No change	No change	No change
Mgmt. Class III		471,884	No change	No change	No change	No change	No change
Mgmt. Class IV		886,569	No change	No change	No change	No change	No change
Social and Economic Conditions							
Livestock Sales from Allotments	Total dollars per year	1,418,550					
Short term (1982)			1,446,240	1,418,550	145,960	1,446,240	1,029,895
Long term			1,823,250	1,418,550	145,960	2,156,520	1,029,895
Herd Size (Cattle and Horses)	Average herd size by size category						
Short term (1982)	Subsistence	14	17	14	3	17	11
	Small Commercial	112	98	112	35	98	84

SUMMARY OF IMPACTS

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Social and Economic Conditions (Cont'd)	Medium Commercial	268	267	268	73	267	199
	Large Commercial	525	478	525	135	478	349
Herd Size (Cattle and Horses)	All	48	48	48	12	48	35
Long term	Subsistence		22	14	3	24	11
	Small Commercial		127	112	35	156	84
	Medium Commercial		328	268	73	362	199
	Large Commercial		598	525	135	688	349
	All		61	48	12	68	35
Herd Size (Sheep and Goats)	Average herd size by all allottees	25					
Short term (1982)			33	25	6	33	20
Long term			36	25	6	46	22
Ranching Population (Three-County Area)	Appropriate number of persons						
Short term		1,070	1,080	1,070	440	1,080	Decreasing
Long term		-	1,110	1,070	440	1,120	1,020

CHAPTER 1

PROPOSED ACTION AND ALTERNATIVES

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PROPOSED ACTION AND ALTERNATIVES

INTRODUCTION

This Environmental Impact Statement (EIS) evaluates the impacts that would result from a Proposed Action and four possible grazing management alternatives that could be implemented by the Bureau of Land Management (BLM) on 138 grazing allotments located in the San Juan Planning Unit in northwestern New Mexico. This Planning Unit includes portions of San Juan, Rio Arriba, and Sandoval Counties. The programs evaluated are the Proposed Action, No Action Alternative (NA), Elimination of Livestock Grazing Alternative (ELG), Maximization of Livestock Forage Production Alternative (MLFP), and Enhancement of Other Resource Values Alternative (EORV).

This EIS is prepared in compliance with Section 102 (2) (c) of the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et. seq.), and with the Council on Environmental Quality (CEQ) regulations (43 CFR 1500-1508). The Proposed Action and the alternatives considered have been designed to lead to decisions that will achieve the requirements of the basic environmental policy set forth in Section 101 of NEPA.

It is the policy of the federal government, in cooperation with state and local governments and other concerned public and private organizations, to use all feasible means and measures (including financial and technical assistance), to (1) foster and promote the general welfare, (2) create and maintain conditions under which man and nature can exist productively, and (3) fulfill the social, economic, and other requirements of present and future generations.

There are six specific environmental objectives within this federal responsibility to improve and coordinate federal plans, programs and resources, as follows:

1. To fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.

2. To assure for all Americans safe, healthful, productive and aesthetically and culturally pleasing surroundings.

3. To attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable or unintended consequences.

4. To preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice.

5. To achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.

6. To enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

All of these objectives are expected to be achieved by the Proposed Action. Changes in livestock distribution would enhance the quality of the vegetation, (Objective 6). Implementation of various design features would mitigate impacts of the Proposed Action, thus preserving important environmental elements (Objective 4), minimizing environmental harm (Objective 3), and protecting the surroundings (Objective 2). Increases in livestock, deer and antelope numbers would help achieve a more productive balance between population and resource use (Objectives 2 and 5). The result of the actions should be an environment that is improved in overall quality above the existing environment, thus maintaining the federal estate for the use of succeeding generations (Objective 1).

It is further authorized in section 102 that policies, regulations, and public laws shall be interpreted and administered in accordance with the policies set forth in NEPA.

BACKGROUND

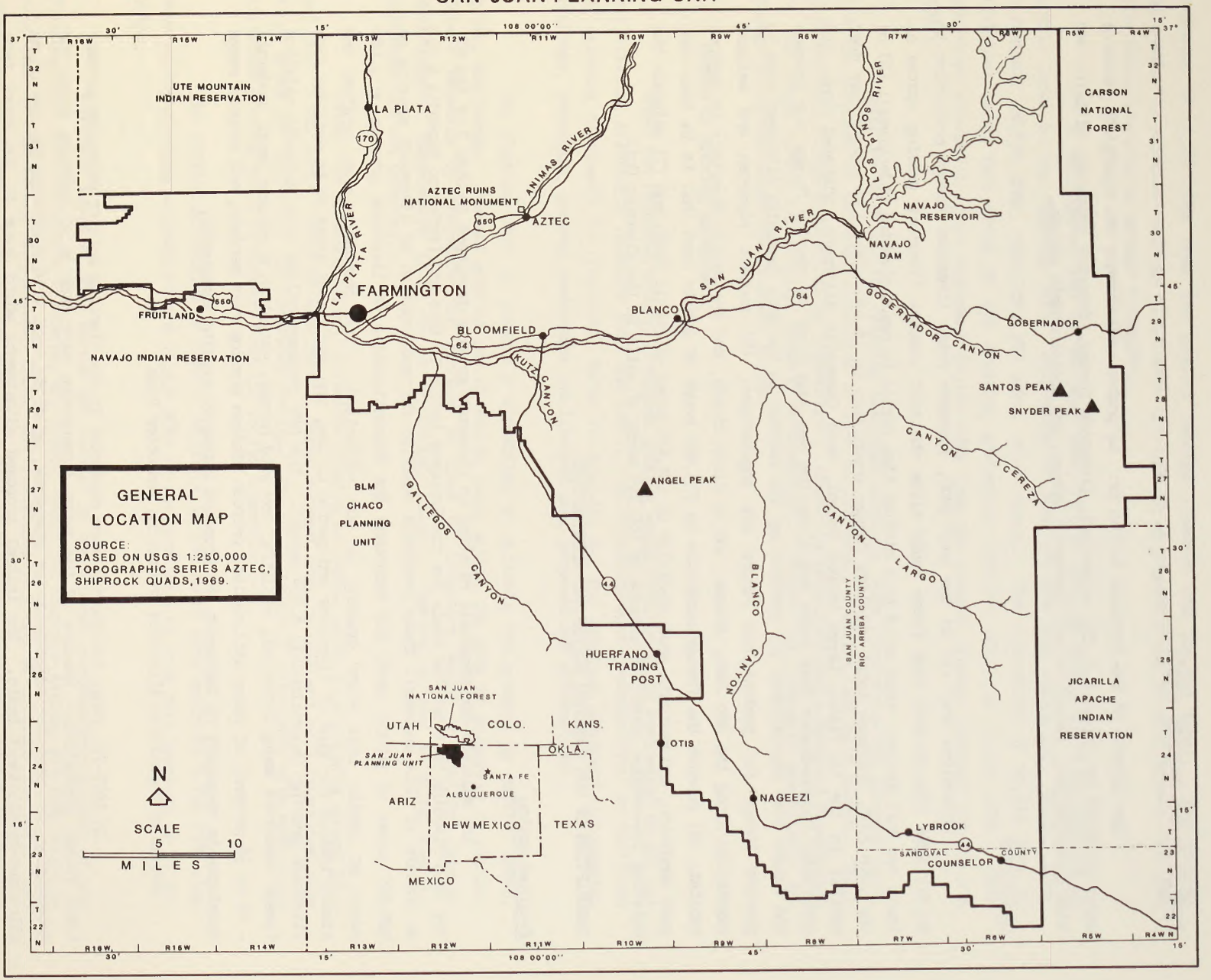
The San Juan Planning Unit contains about 1,429,951 acres, of which 981,772 acres (69 percent) are public land managed by various agencies of the federal government; 122,284 acres (9 percent) are state land; 27,695 acres (2 percent) are Indian land; and 298,200 acres (21 percent) are privately owned (refer to Visual A). The Planning Unit is bounded by Colorado on the north, the Jicarilla Apache Indian Reservation and the Carson National Forest on the east, the Navajo and Ute Mountain Indian Reservations on the west, and the BLM Chaco Planning Unit on the south (the north boundary of which generally follows New Mexico State Highway 44; refer to Map 1-1).

The Farmington Resource Area Office, Albuquerque District, BLM, administers 946,844 acres of the public land for various uses in this Planning Unit. Grazing allotments in the Planning Unit contain 926,909 acres of public land, of which 240,409 acres are managed under 15 Allotment Management Plans (AMPs) that were implemented prior to December 30, 1974. Another 686,500 acres are currently managed without AMPs. The remaining 19,935 acres of public land in the Planning Unit comprise various public purpose withdrawals and public water reserves. Any livestock grazing on these lands is administered by the BLM.

The Proposed Action was developed through the land use planning process (range inventories which provide an indication of present forage production and multiple use recommendations from the Management Framework Plan [MFP]). Alternatives were developed (from opportunities identified in earlier stages of the land use planning process, Unit Resource Analysis [URA] and resource recommendations from the MFP) (Appendix A). A fundamental determination resulting from assessing these alternatives would be the allocation of forage for consumptive use by livestock, wildlife, and wild horses.

For purposes of this EIS, the short term is considered to be the nine-year period after implementation has begun. The long term is the period between the end of the short term and the year 2000.

SAN JUAN PLANNING UNIT



MAP 1-1

PURPOSE OF THE PROPOSED ACTION

The purpose of the Proposed Action is: to protect and enhance the vegetation resource which provides the foundation for watershed, livestock forage, forestry products, wildlife and wild horse habitat, recreation and aesthetic values, and socioeconomic values.

OBJECTIVES

Objectives are: (1) by the year 2000, increase total livestock forage production to 90,311 AUMs (the 20-year time frame would allow the most complex livestock grazing system at least two full cycles; this would be a minimum time period to reach planning objectives); (2) by the year 2000, increase total wildlife forage production to 16,630 AUMs; (3) protect key deer habitat in the La Plata, Largo Canyon School, Rosa Community Allotment, Timbered Cone, and Gobernador Canyon-Snyder Peak areas and along the San Juan River to provide forage for present and future deer populations; (4) protect key elk habitat in the Rosa Community Allotment area to provide forage for present and future elk populations; (5) protect riparian and wetland vegetation along the San Juan, Animas, and La Plata Rivers, and the Navajo Reservoir to improve habitat; (6) improve the forage condition on 773,480 acres of public land that is in less than good condition, and maintain good condition on 153,429 acres of public land; and (7) maintain the existing low-erosion condition classes on 169,354 acres of soils in the Planning Unit.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Proposed Action

The multiple-use proposals relating to livestock grazing developed in Step 2 of the MFP for this Planning Unit are the basis for the Proposed Action in this EIS (refer to Appendix A for an outline of this process). These proposals reaffirm the continuation of livestock grazing on 925,827 acres of public land, and recommend the discontinuation of livestock grazing on 1,082 acres of public land where grazing is now authorized. The proposals also confirm the classification for kind of livestock and period of use, and designated areas to be excluded from livestock grazing (approximately 8,554 acres). The MFP recommendations also allocate existing forage resources among livestock, wildlife, and wild horses; establish a maximum level (moderate - 40 to 60 percent) of range utilization; propose minimum grazing rest periods, and propose range developments necessary to implement the proposed intensive grazing management.

Amount of Vegetation Allocated to Grazing and Other Uses

In 1977-78, range inventories were conducted in the Planning Unit to determine present total forage production. Results of the range inventories were used as a starting point for determining the need for adjustments in livestock, wildlife, and wild horse grazing use on an allotment-by-allotment basis. The initial proposed adjustments would occur in the short term only. Where monitoring studies indicated that future adjustments were needed, vegetation allocations would be made through the BLM planning process. Range inventories indicate that present total forage production on public lands within the Planning Unit is 75,410 AUMs. Of this total, the initial AUM allocations would be 69,335 AUMs to livestock. This initial allocation to livestock would be a reduction of 39,036 AUMs from the existing preference (108,371 AUMs), and an

increase of 3,189 AUMs from the present average licensed use (66,146 AUMs). The initial allocation to wildlife would be 5,799 AUMS (the same as at present), and to wild horses, 276 AUMS (for which there is no present allocation).

It is anticipated that by the year 2000, 107,217 AUMs of forage would be produced on public lands in the Planning Unit. Allocation of AUMs at this time would be: 90,311 AUMs, livestock; 16,630 AUMs, wildlife; 276 AUMs, wild horses. The allocation of 90,311 AUMs to livestock would fall short of the existing preference (108,371 AUMs) by 18,060 AUMs. This long-term allocation would represent 24,165 AUMs from the present average licensed use (66,146 AUMs).

Refer to Table 1-1 for existing allotment acreages, AUMs (preference and licensed use), and the proposed or surveyed allocation of AUMs to livestock, wildlife, and wild horses. Table 1-2 indicates forage allocations by alternative. (Refer to Appendix C for a detailed description of the range survey and grazing capacity methodology). Figure 1-1 indicates graphically the forage allocation under the Proposed Action.

Method of Grazing Management

Under the Proposed Action, livestock grazing would continue to be authorized on all but two existing allotments (numbers 5013 and 5057). No consolidations (combinations) or divisions of existing allotments is proposed. Refer to Appendix H-1 for detailed allotment information (acreage, ownership, present preference and licensed use, proposed AUM allocations).

The Planning Unit is presently classified as suitable for grazing by cattle, sheep, goats, and horses. Present grazing use of public lands within the area is primarily by cattle. Future requests by operators for changes in kind of livestock would be analyzed through Environmental Assessments (EAs) on an individual basis. Changes in the existing kind of livestock are not proposed.

Under the Proposed Action, livestock grazing on public lands in allotments number 5013 and 5057 (1,082 acres) would be eliminated. Range surveys done in 1977 and 1978 determined that these areas are unsuitable for livestock grazing. The total number of allotments with authorized livestock grazing would be reduced from 138 to 136 (Appendix H-1).

The initial allocation of AUMs to wildlife in the short term would be 5,799 AUMs (the same as the existing allocation) and 16,630 AUMs by the year 2000 (a long term increase of 10,831 AUMs).

Two small herds of wild horses are located in the extreme northeastern portion of the Planning Unit (Rosa Community Allotment, No. 5058). Under the Proposed Action, 276 AUMs would be allocated to wild horses in the short term. MFP recommendations are to maintain the total herd population at 23 head. Therefore 276 AUMs would also be allocated to the wild horses in the long term.

Presently there are 15 existing AMPs in the Planning Unit, all of which are managed under deferred rotation grazing systems. Under the Proposed Action, the grazing systems and season of use for all existing AMPs would remain unchanged.

TABLE 1-1

SUMMARY OF EXISTING ALLOTMENT STATUS, ACREAGE, AND AUM ALLOCATIONS[a/],[b/]

Existing Allotment Status	Number	Acres			AUMs Allocated			
		Public	Other	Total	Livestock Federal Preference	Livestock Active Use Permitted[c/]	Wildlife	Wild Horses
AMP	15	240,409	84,734	325,143	24,724	17,522	5,191	0
Non-AMP[d/]	122	685,858	266,658	952,516	83,647	48,624	608	0
Unalloted	1	642	320	962	0	0	0	0
Total	138	926,909	351,712	1,278,621	108,371	66,146	5,799	0

Source: BLM Planning Documents, 1978.

Notes: [a/] Refer to Appendix H-1 for detailed existing and proposed allotment information.

[b/] The BLM is currently working on policies and procedures to reduce the hardships which would be imposed on individual operators as a result of livestock use adjustments. These policies and procedures will become a part of this proposal as they are approved.

[c/] Six-year average of licensed use.

[d/] Elimination of livestock grazing is proposed on two non-AMP allotments. Acreage and AUMs currently allocated are as follows: Acres: Public - 1,082; Other - 777; Total - 1,859. AUMs: Livestock, Federal Preference - 266; Livestock, Active Permitted Use - 144; Wildlife - 0; Wild Horses - 0.

TABLE 1-2

PROPOSED AND PROJECTED VEGETATION ALLOCATION BY ALTERNATIVE

	Proposed (1980)					Projected (Yr. 2000)				
	Livestock AUMs	Wildlife AUMs	Wild Horses AUMs	Other	Total AUMs	Livestock AUMs	Wildlife AUMs	Wild Horses AUMs	Other	Total AUMs
Elimination of Livestock Grazing [a/]	0	5,799	420	69,191	75,410	0	16,630	420	87,408	104,458
Enhancement of Other Resource Values	42,041	5,799	420	27,150	75,410	42,041	16,630	420	48,126	107,217
No Action	66,146	5,799	0		71,945	66,146	5,799	0		71,945
Proposed Action	69,335	5,799	276		75,410	90,311	16,630	276		107,217
Maximization of Livestock Forage Production	69,335	5,799	276		75,410	106,748	16,630	276		123,654

Source: BLM Planning Documents, 1979.

Notes: a/ The Proposed Action and alternatives are presented in a different order from that discussed in the text because it is felt that this revised order provides a clear comparison of forage allocation levels (from low to high).

b/ This vegetation is reserved for non-consumptive uses, including watershed, wildlife habitat and cover and aesthetics.

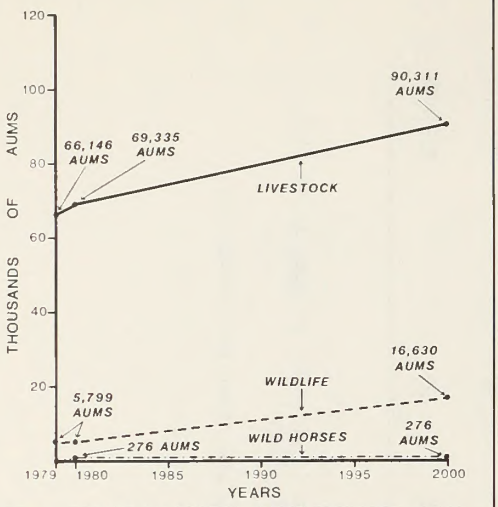


FIGURE I-1. FORAGE ALLOCATION UNDER PROPOSED ACTION

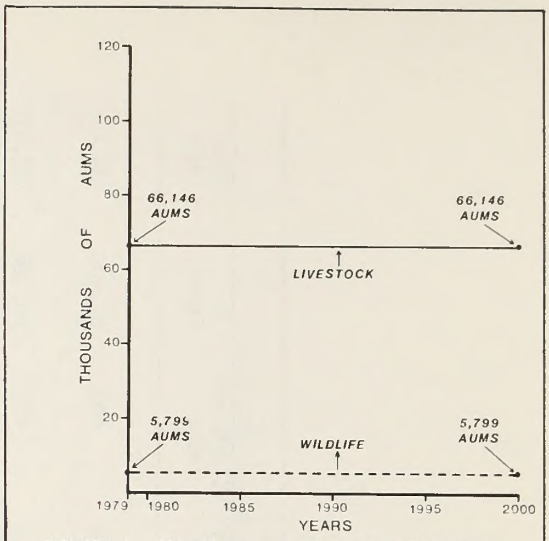


FIGURE I-2. FORAGE ALLOCATION UNDER NO ACTION ALTERNATIVE

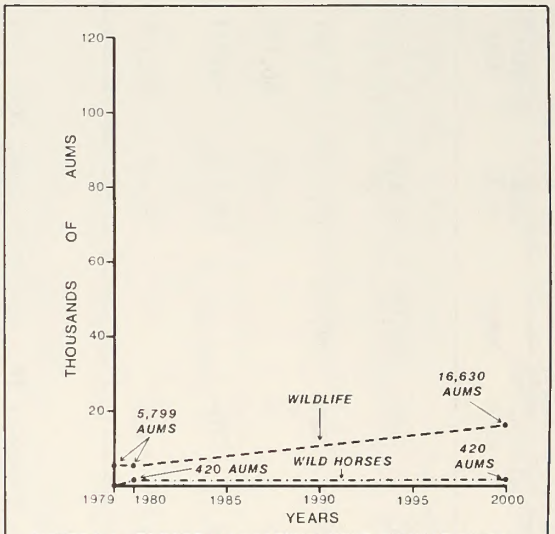


FIGURE I-3. FORAGE ALLOCATION UNDER ELIMINATION OF LIVESTOCK GRAZING ALTERNATIVE

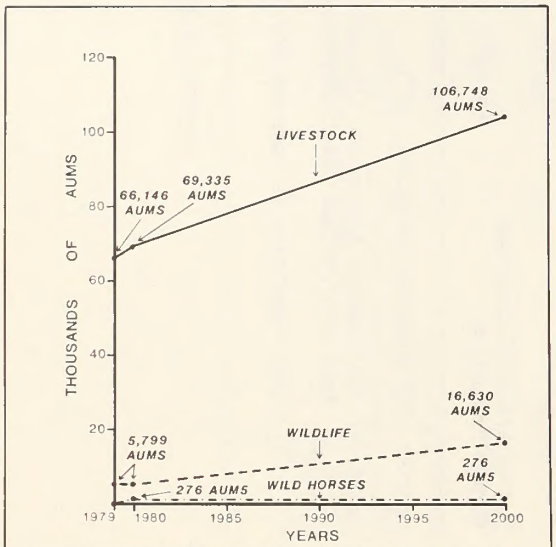


FIGURE I-4. FORAGE ALLOCATION UNDER MAXIMIZATION OF LIVESTOCK FORAGE PRODUCTION ALTERNATIVE

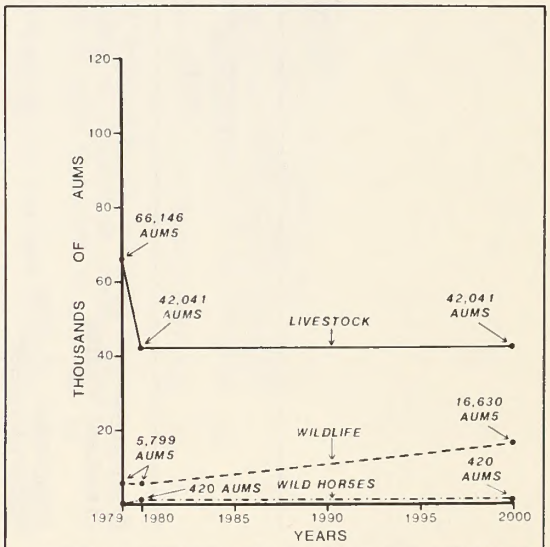


FIGURE I-5. FORAGE ALLOCATION UNDER ENHANCEMENT OF OTHER RESOURCE VALUES ALTERNATIVE

For the remaining 121 non-AMP allotments, intensive grazing management systems would be developed requiring a minimum spring and summer rest·1 out of every 3 years. This proposed rest period would allow forage-producing species to go through critical developmental stages without being grazed for 1 year of 3. This development would lead to greater vigor and reproduction of these species, resulting in increased cover. Spring rest would benefit cool-season species and summer rest would benefit warm- season species. During the development of grazing systems, key plant species would be determined on an allotment-by-allotment basis for livestock and wildlife. (Refer to Appendix E-1 for the key species and major forage and browse species found in the Planning Unit).

The minimum rest period would also require that each pasture within an allotment be rested at least one spring (April 1 to May 31) and one summer (July 15 to September 15) out of every 3 years. Numerous combinations to implement the required rest period would be available; e.g., livestock could either be removed from the allotment to other private or leased lands, or concentrated in other pastures of the allotment not being rested.

Ranch operator input in developing a workable grazing management system is essential. Problems associated with livestock reductions, rest period requirements, etc., would be resolved on an allotment-by-allotment basis through the Rangeland Consultation Policy (P.L.-95-514, Section 8--Consultation and Coordination). Refer to Appendix B for policy guidelines. The BLM is currently working on policies and procedures to reduce the hardships which would be imposed on individual operators as a result of livestock use adjustments. These policies and procedures will become a part of this proposal as they are approved.

Period of Use and Kind of Livestock

As mentioned previously, the Planning Unit is considered suitable for grazing by cattle, sheep, goats and horses. Period of use is primarily seasonal; 63 allotments are grazed fall-winter-spring, 29 are grazed in the summer, and 46 are grazed yearlong. Refer to Appendix H-2 for present period of use by allotment.

Under the Proposed Action, no change in existing kind of livestock is proposed. Period-of-use modifications would be required on those allotments with yearlong or spring-summer use periods in order to implement the proposed rest periods.

Monitoring, Evaluation, and Adjustment of the Proposed Action

Monitoring of the grazing management program would be necessary to determine results of the grazing treatments, vegetative treatments, and the development of new facilities on the Planning Unit. Appropriate monitoring techniques would be used to ensure that changes were identified and quantified. During the monitoring stage, ranch operators and other interested groups would be contacted and informed of procedures used in establishing the studies.

As a minimum, the studies would be designed to include the actual livestock grazing use (annually), the degree of forage use (annually),range condition trend (over a period of time), and climatic conditions (seasonally). These studies would be initiated prior to any changes being made under the Proposed Action (except for adjustment of livestock numbers) and would be accomplished under BLM Manual Section 4413 guidelines. All grazing systems would be evaluated at

the end of each grazing treatment cycle as provided for in BLM Manual Section 4413. Information on wildlife (population surveys, browse utilization and pellet count transects) and other resources would also be collected and analyzed.

Where objectives (see previous Objectives section in this chapter) are not being met, the grazing systems would be modified or the vegetation treatment practices adjusted. Where studies demonstrate increases in forage production, additional livestock grazing may be authorized, consistent with other resource needs. Modifications would be planned to include changes in the grazing use, period of use, additional range developments, method of vegetation treatment, or any combination of these in order to attain the objectives. Modifications would require the preparation of an environmental assessment (EA) before significant changes could be effected.

During periods of drought (substantiated by rainfall records) or other emergencies, adjustment in livestock numbers would be made to guard against damage to the vegetal-soil resource. In instances where adjustments were needed, the rancher would be contacted and adjustments would be jointly agreed upon, whenever possible. If an agreement cannot be reached, then the needed adjustment would be put into effect by BLM decision.

Support Facilities

Vegetation treatments and construction of range developments would be necessary for implementation of the Proposed Action. These are listed in Appendices E-2 and H-3, respectively. Vegetation treatments proposed for the Planning Unit are: seed only, 120 acres; chain sagebrush, 29,420 acres; chain and seed sagebrush, 16,305 acres; plow and seed sagebrush, 6,914 acres; chain and seed pinyon-juniper, 1,360 acres; total, 54,119 acres.

Range developments proposed for the Planning Unit under the Proposed Action include: 9 dirt tanks, 18 miles of pipeline, 33 drinking tubs, 15 equipped wells (with windmill, pumpjack, or electric pump), 7 cattleguards, 7 storage tanks (20,000 gallon), 6 springs, 1 slickrock catchment, 7 miles of fence, and one sump. These developments are a combination of MFP recommendations from the range, watershed, and wildlife activities, and all three of these activities would benefit from the developments.

The developments and vegetation treatments are needed to implement grazing systems, ensure better distribution of livestock, and increase livestock production by achieving proper utilization of forage over the entire area, as well as to make new areas available for livestock use. Wildlife habitat and watershed conditions would also be improved through implementation of the proposed developments.

Additional proposed developments that would primarily benefit big game wildlife species, are: 20 springs, 5 slickrock catchments, and 20 inverted umbrellas. These developments would ensure better distribution of wildlife and increase wildlife production through improved forage and habitat utilization over the entire area. New areas would be made suitable by reducing intraspecific competition between wildlife and livestock. A benefit-cost analysis would be done before construction on all projects during the AMP or grazing management system preparation period.

Refer to Visuals B and C for existing and proposed range developments. Appendix H-3 presents proposed range developments by allotment and Appendix E-2 lists vegetation treatments by allotment. Exact locations for proposed projects within each allotment will be determined when specific grazing management systems are developed for each allotment.

Maintenance of Range Developments and Land Treatments

Maintenance of range developments on public land is subject to policy and guidance contained in BLM Manual Section 7120. Fences and cattleguards built primarily for livestock mananagement will be maintained by ranchers under agreements complying with BLM guidelines. Fences and cattleguards will be maintained on a 5-year interval.

The BLM will maintain all BLM constructed water developments. Ranchers' obligations would be limited to periodic inspections and reporting of damage or malfunction. The BLM schedule for inspection and maintenance of various water developments is dirt tanks, 3 years; springs, wells, well facilities, pipelines and wildlife waters, annually. Adjustments in maintenance schedules will be made as needed for individual projects.

The BLM will maintain brush control treatments at intervals of about 10 years for the vegetation treatment benefits to persist indefinitely. Maintenance, such as rotary brush cutting, will be used when sagebrush increases enough to significantly reduce forage production.

Standard Operating Procedures

Before any range development is implemented on public land, the BLM must adhere to certain procedures and design specifications to protect all resources. These are mandated through certain laws, executive orders, and manual requirements. The following committed procedure will be used in constructing the proposed range developments and applying vegetation treatments.

1. This EIS analyzes cumulative impacts of proposed range developments. However, before construction, the BLM will prepare site-specific environmental analyses to determine environmental impacts on all resources from projects required for implementation of grazing management systems.

2. Permanent roads or trails will not be constructed to project sites. Existing access roads and trails and off-road vehicles will be used where needed.

3. Areas to be cleared for construction of range projects will be restricted to the minimum.

4. Construction of all fences will be in accordance with multiple-use management as indicated in the design constraints outlined in BLM Manual 1737.

5. After construction, disturbed areas will be revegetated.

6. A mixture of seed of various species will be used where seeding is done during vegetation treatments. Typical seed mixtures that have been used successfully for drilling (plowed areas) and broadcasting (chained areas) are as follows.

Species	Pounds Per Acre of Seed Drilling	Broadcasting
Crested wheatgrass	4	3
Western wheatgrass	0.5	3
Pubescent wheatgrass		2
Smooth brome	1	1
Nomad alfalfa	0.5	1
Fourwing saltbush	1.75	
Small burnet	0.25	

Typically, a mixture of cool- and warm-season forage species will be used to help stabilize the overall annual production. Livestock grazing will be deferred a minimum of two growing seasons on all treated areas to permit establishment of vigorous new plants.

7. A qualified botanist will intensively survey all potentially disturbed areas for federally listed threatened or endangered plant species and for state-listed species. Those areas in which no disturbance is permitted due to threats to listed species will be designated. Construction will be moved to alternate, approved, site locations.

8. In large areas where topsoil is to be disturbed, vegetation treatments will be accomplished in two stages. An undisturbed area (or areas) will be left to act as a buffer zone(s) against possible added wind and water erosion. These buffer zones will then be treated as soon as the first treated areas are in full production. This method will take an additional three years to complete.

9. Soil maps and BLM watershed specialists will be consulted for on-site investigations to determine areas of least impact, i.e., to avoid soils on steep slopes and soils in the critical and severe erosion condition classes.

10. The trees uprooted and downed during chaining will be salvaged, if access and proximity permit, by allowing harvest of this wood for public use as fuelwood, pulp, posts, or other woodland products of commercial value.

11. A threatened or endangered wildlife species clearance will be required before construction of developments is started. Formal consultation with the Fish and Wildlife Service under Section 7 of the Endangered Species Act has been initiated (refer to Appendix G-3), and if it is determined that the developments would lessen the value of the habitat for a threatened or endangered species, the project will be modified, relocated, or abandoned.

12. Islands and drainages will be left in native vegetation on all sagebrush control treatment areas. No vegetation treatment will take place on riparian areas. Ten percent of the total area proposed for each treatment will be retained for wildlife cover and forage during regrowth of young brush plants.

13. A raptor inventory will be conducted on areas proposed for vegetation treatment to identify and flag land within a 1/4-mile radius of active nests so that they are not disturbed by the proposed treatments

14. Sagebrush control will be done in irregular patterns to maximize edge effect.

15. Population control measures may be required for wild horses in the long term to reach optimum numbers and alleviate increased forage competition with wildlife. Private interest groups concerned with wild horse protection may assist when possible within federal regulations.

16. New or expanded grazing use and supporting facilities will be regulated so that impairment of suitability for designation of proposed Areas of Critical Environmental Concern (ACECs) will not occur (refer to the Federal Register, Vol. 44, No. 110, Sec. V-D, June 6, 1979-Proposed Interim Management).

17. Lands under wilderness review will be managed under policy and guidelines identified in BLM's Interim Management Policy and Guidelines for Land Under Wilderness Review (1979) until the entire wilderness inventory and study is completed and Congress has acted.

18. The BLM recognizes that some of the activities involved in implementation of the rangeland management program could affect historic and cultural properties. Therefore, the BLM will conduct intensive field (Class III) inventories of specific areas that would be impacted by implementing activities prior to approval. If historic or cultural properties are identified, every effort will be made to avoid adverse effects. However, where that is not possible, the BLM will consult with the State Historic Preservation Officer and the Advisory Council on Historic Places in accordance with the Programmatic Memorandum of Agreement (PMOA) by and between the Bureau and the Council, dated January 14, 1980. This PMOA sets forth a procedure for developing appropriate mitigating measures to lessen the adverse impacts. In addition, no vegetation treatments would be carried out in potential Areas of Critical Environmental Concern for cultural resources prior to a decision on the status of these areas.

19. Areas scheduled for range developments will be examined and cleared by a paleontologist before construction begins. If potentially valuable fossils are discovered during construction, every effort willbe made to recover them.

20. Visual resource contrast ratings will be completed in the EAs prior to construction of all proposed range developments and implementation of grazing management systems (BLM policy; BLM Manual Section 8431). Appropriate mitigating measures will be implemented to meet the Visual Resource Management (VRM) class objectives for the area in which the action is located.

21. All refuse will be removed from work areas on public lands and will be disposed of in an approved sanitary landfill.

22. All storage tanks will be buried when feasible.

Implementation Schedule

During the first year of implementation, consultation with livestock operators and other interest groups would be made on an allotment-by-allotment basis concerning livestock

adjustments, AMPs, or grazing systems. (Refer to Appendix B for consultation policy and guidelines). Livestock adjustments of sufficient magnitude to ensure a positive vegetative response would be initiated during the first year. Studies to determine actual use, key species utilization and range condition trend would be established to monitor vegetation changes during the adjustment period. These monitoring studies would be evaluated, and further adjustments made as required by grazing regulations, the monitoring studies would be continued, evaluated,and additional livestock adjustments would be made as needed. Implementation of range developments, vegetation treatments, and grazing systems under the the Proposed Action would occur over a 9-year period. Refer to Appendix H-4 for the proposed implementation schedule by allotment. The proposed developments would be started upon completion of project layout and design and project-specific environmental assessment (EA) completion.

No Action (NA) Alternative

Under this alternative, current livestock management practices would continue, and livestock forage allocation would be maintained at 66,146 AUMs (present) average licensed use in both the short and long term. This level of use is not expected to change, even though a grazing preference of 108,371 AUMs exists. Forage allocation to wildlife would remain at 5,799 AUMs (short and long term) and no forage would be allocated to wild horses. Figure 1-2 shows forage allocation under the NA Alternative.

Implementation of the NA Alternative would involve the following:

1. The 15 allotments which are currently under implemented AMPs would be intensively managed, while those not having AMPs would be managed as they are at present. No new grazing management systems would be developed.

2. Monitoring studies of actual grazing use, forage use, range condition trend, and climatic conditions would be conducted on these AMP allotments.

3. No new range developments would be constructed, but existing range developments would continue to be maintained.

Elimination of Livestock Grazing (ELG) Alternative

Under this alternative, all domestic livestock would be removed from the public lands. In the short term, 5,799 AUMs would be allocated to wildlife to meet existing needs, and 16,630 AUMs would be allocated over the long term to fill anticipated needs. The allocation to wild horses would be 420 AUMs for both the short and long terms. (The AUM figure for wild horses under the ELG Alternative was taken from the BLM's MFP recommendation RM-2.1. However, this recommendation was not accepted. The higher figure (420 AUM's) is used in this alternative to provide a range of levels of use for wild horses.) A BLM U.S. Forest Service cooperative agreement would be developed for joint agency protection and management of wild horses in the Planning Unit. The remaining 69,191 AUMs (short term) and anticipated 87,408 AUMs (long term) would be allocated to small game species cover, watershed, and aesthetics. Refer to Figure 1-3 and Table 1-2 for forage allocation under the ELG Alternative.

Implementation of the ELG Alternative would entail the following:

1. Livestock grazing would be eliminated on 926,909 acres of public land, and 108,371 AUMs of preference on public land would be cancelled. No new grazing management systems would be developed, and those AMPs now implemented would be cancelled. No monitoring of grazing systems would be carried out.

2. State and private land which is intermingled with public land would have to be used in a way that would avoid grazing trespass on public land; livestock could be controlled by herding or by fencing the private and state land. Trailing permits would be issued so livestock could travel across public land to reach National Forest, state, and private land.

3. No range developments would be maintained or constructed unless necessary for other BLM programs such as wild horses, wildlife, or watershed. Range developments that serve no useful purpose would be removed from the public land.

Maximization of Livestock Forage Production (MLFP) Alternative

This alternative would provide an intensive program of range management techniques to achieve optimum forage production for livestock. Vegetation treatments would be carried out on 237,464 acres to convert existing sagebrush and pinyon-juniper vegetation to grassland.

The initial authorized livestock use under the MLFP Alternative would be the same as for the short term under the Proposed Action, 69,335 AUMs. Through the proposed vegetation treatments, anticipated AUM allocations to livestock in the long term would increase to 106,748 AUMs. Forage allocations to wildlife to meet existing and anticipated (long term) needs would be the same as under the Proposed Action, 5,799 and 16,630 AUMs respectively. In accordance with MFP recommendations, wild horse AUM allocations would also be the same as under the Proposed Action, 276 AUMs in both the short and long terms. Figure 1-4 and Table 1-2 show forage allocations under the MFLP Alternative.

The range developments and intensive grazing management system described for the Proposed Action would also be implemented. Specific operations under the MLFP Alternative would be as follows:

1. Adjustments in authorized stocking rates would be made as under the Proposed Action and in accordance with the BLM Resource Inventory (1976-78) to balance proper forage utilization with soil and vegetation production.

2. Intensive grazing management would be implemented on 136 allotments, and present grazing management would continue on the 15 allotments with AMPs as described in the Proposed Action. In addition, under the MLFP Alternative 183,465 acres would receive vegetation treatment to convert pinyon-juniper or sagebrush to more productive forage plants for livestock use. Vegetation treatment projects would include: 25,705 acres of sagebrush spraying, 106,889 acres of pinyon-juniper mechanical treatment, and 50,871 acres of sagebrush mechanical treatment. These treatments would be in addition to those described for the Proposed Action (54,119 acres). Standard operating procedures for all mechanical treatments would be the same as or similar to

those of the Proposed Action. Appendix E-3 shows the acreage involved and the projected livestock AUMs that would become available on each allotment after vegetation treatment. The type of mechanical treatment to be used on the additional 157,760 acres under the MLFP Alternative would be determined when specific management plans are developed for each allotment.

3. Monitoring studies would be undertaken to determine the results of the systems and treatments in terms of actual grazing use, forage use, range condition trend, and climatic conditions.

4. Standards for spraying projects under the MLFP Alternative will be based on standard BLM designs. Details on these designs are as follows.

The objectives of chemical control of big sagebrush are to (1) improve deteriorated rangeland through removal of this undesirable invading species; (2) increase production of perenial grass and forb species that provide better quality forage for domestic livestock than big sagebrush; (3) increase soil moisture available for growth of grasses and forbs, (4) reduce surface soil erosion by increasing cover of perennial grasses; and (5) achieve the above objectives without damage to desirable species by using selective herbicides.

The methods used for chemical control of sagebrush under the MLFP Alternative would generally follow recommendations of the Inter-Agency Range Committee (1967). These recommendations include spraying of areas in which the main undesirable plant species is big sagebrush but which are free of appreciable stands of rabbitbrush and significant amounts of valuable browse and enough desirable plants so that site takeover is assured when these plants are released from dominance by the big sagebrush.

Chemical recommendations are to spray with two pounds acid equivalent per acre of a low-volatile ester formulation of 2, 4-D [(2, 4-dichlorophenoxy)acetic acid]. This material would be mixed with one gallon diesel oil and sufficient water to make a total application volume of five gallons per acre. These recommendations are consistent with current recommendations of the New Mexico Cooperative Extension Service. Sprays would not be applied to water or areas where they could reasonably be expected to get into water. Spraying would not be conducted when wind velocities were greater than 6 miles per hour or when upward air currents were present.

The expected rate of kill on the target species (sagebrush) is from 75 to 90 percent. The accumulation or average persistence of phototoxicity in the soils may vary from 1 to 4 weeks. Ester formulations are essentially insoluble and highly adsorbed to soil particles (1:95 ratio) in water; therefore very little movement in the soil would be expected. Degradation of 2,4-D is mainly by microbial breakdown; however, minor losses result from photodecomposition (Weed Science Society of America, 1979).

Spraying would be restricted to seasons when two to three inches of new twig growth was present on sagebrush plants and there was sufficient soil moisture for continued vigorous growth. Spraying dates would vary from year to year depending on moisture conditions.

Livestock would be removed from areas to be sprayed prior to the beginning of spraying, and would not be allowed to return to the area until 2 years after spraying is completed.

Sprays would be applied from aircraft equipped with drift reduction nozzles. Applications would be conducted by contractors selected through competitive bidding.

Policies that would be followed during herbicidal control projects under the MLFP Alternative are: (1) only federally registered herbicides would be used; (2) herbicides would be used only as specified on their currently effective labels; (3) an EA would be prepared prior to each spray project to identify impacts and measures to be taken to mitigate adverse environmental impacts; (4) projects which include use of herbicides on public lands would be reviewed for approval in advance by the Division of Rangeland Management, BLM, Washington, D.C.; (5) federal and state agencies with responsibilities for environment, public health, and fish and wildlife would be informed of programs and cooperative measures developed when necessary; (6) personnel handling or applying herbicides on public lands would be holders of, or would be under direct supervision of holders of, a commercial applicator's license; (7) each person involved with the handling and application of the herbicide would be instructed on safety procedures to be used, and would be required to use any personal protective clothing and/or equipment specified on the label; (8) a record of areas sprayed, dates, and spray formulations would be incorporated into the special conditions that are appendaged to Federal Antiquities Permits by the BLM Albuquerque District to ensure that any possible residual chemicals from spraying be taken into account in the selection and preparation of cultural resource materials for radiocarbon dating.

Additional measures that would be included in the design of each herbicide application project to ensure effective coverage and to minimize adverse impacts on the environment under the MLFP Alternative include the following: (1) sufficient flagging would be used to keep application aircraft in straight-line flight patterns at line intervals equal to the swath width of the contractor's application equipment; (2) areas which contain populations of threatened or endangered plant and wildlife species would not be sprayed; (3) mixing, loading, and cleanup operations would take place in an area where any accidental spill could be contained and would not flow into a stream or body of water; (4) empty containers would be rinsed, perforated, and buried in an approved landfill; (5) application contracts would require an air gap or reservoir between the live water intake and the mixing tank to prevent any backflow of chemicals into water source; (6) spraying would not be conducted when the air temperature is above 85 degrees F., when precipitation is occurring, or when precipitation occurrence is imminent; (7) weather conditions would be continually monitored during spray applications; (8) spray aircraft would normally be required to fly at an airspeed of less than 100 miles per hour and at a height less than 20 feet above the vegetation unless obstructions were encountered; and (9) herbicides would not be applied within 1,000 feet of watering locations, houses, key sensitive wildlife habitat locations,riparian areas, drainages, or populations of proposed threatened or endangered plant and wildlife species.

Enhancement of Other Resource Values (EORV) Alternative

This alternative considers a lower level of livestock use than the Proposed Action in order to enhance other resource values. Allocation of livestock AUMs under this alternative would be the same as under the Proposed Action on all good condition range. Livestock AUMs on fair and poor condition range (public land only) would be reduced by 50 percent to enhance wildlife habitat, visual resources, and watershed protection. Half of the usable AUMs (on poor and fair ranges) would not be counted toward the grazing capacity.

Initial and long-term livestock forage allocations under the EORV Alternative would be 42,041 AUMs (This total represents a 50 percent reduction in the surveyed AUMs on the 773,480 acres of federal lands in fair and poor range condition.) Forage allocations to wildlife would be 5,799 AUMs in the short term and 16,630 AUMs in the long term. Forage allocations to wild horses would be 420 AUMs in both the short and long terms.

The remaining unallotted AUMs (27,150 in the short term, and 48,126 in the long term) would be reserved for small-game cover and habitat, watershed, and aesthetic purposes. Refer to Appendix H-5 for livestock, wildlife, and wild horse AUM allocations by alternative by allotment. Figure 1-5 and Table 1-2 also show figures for AUM allocations.

Range developments, vegetation treatments, and monitoring studies as described for the Proposed Action would also be implemented under the EORV Alternative.

AUTHORIZING ACTIONS

Each rancher would be issued a term permit through the BLM Albuquerque District Office. This would specify allotment, period of use, numbers, and kind of livestock.

Livestock grazing use would be supervised throughout the year. Changes in use requested by the ranch operator that were outside the limits of the Proposed Action or alternative(s) (but consistent with management objectives) would have to be requested in writing and approved in advance of the grazing period. Grazing use outside the limits of the Proposed Action or alternative(s) and without prior authorization would be considered trespass. If trespass occurs, action would be taken by the BLM to ensure that it is eliminated in accordance with regulations in 43 CFR 4150. In addition, marking of livestock to control movement and ensure proper use may be required; preferred methods would be ear tagging or paint marking.

INTERELATIONSHIPS

Other agencies that have programs interrelated with the Proposed Action are the U.S. Forest Service, U.S. Fish and Wildlife Service, Soil Conservation Service, Agricultural Stabilization and Conservation Service, Bureau of Indian Affairs, the Navajo Tribe, U.S. Geological Survey, Office of Surface Mining and Reclamation, New Mexico Environmental Improvement Division, State Engineer, New Mexico Department of Game and Fish, State Historic Preservation Officer, and private landowners.

Federal Programs

U.S. Forest Service (USFS)

The majority of the 65 winter and/or spring use ranchers remove their livestock to summer pasture in the San Juan National Forest in Colorado. Administration of these permits requires close coordination between the BLM and the USFS, especially with regard to livestock movement dates.

A wild horse allocation of 276 AUMs has been proposed for the Rosa Community Allotment The wild horses on this allotment and on the adjacent Carson National Forest are actually part of

the same herd. The fence separating administrative responsibilities does not limit animal movement entirely, and some crossover occurs, primarily during the winter months. The small population of horses on the public lands would be difficult to manage as a result of this mixing. The BLM's MFP Step II recommendation (RM-2.4) has been accepted; this will involve initiating action during fiscal year 1981 to develop a cooperative agreement between the BLM Albuquerque District Office and the Carson National Forest for protection, gathering, and management of wild horses occurring on contiguous "SFS and public lands.

U.S. Fish and Wildlife Service (FWS)

The FWS functions within the Planning Unit with respect to rodent control; these animals may be controlled on public land when damage to other resources can be demonstrated. Incidents of rodent damage on public lands are reported to the BLM, which compiles records of damage. The BLM also authorizes the FWS to control problems on public land after a black-footed ferret survey is completed on specific prairie dog towns.

Even though there is a cooperative agreement with the FWS for animal damage control throughout the BLM's Albuquerque District, the organization in San Juan County is unique. The county, through an advisory committee established by the county commissioners, employs a number of trappers who are authorized to trap problem predator animals on a bounty basis.

Information contained in BLM planning documents indicates that the probability of effects on threatened or endangered species and/or their habitat does exist. Thus, formal consultation with the FWS under Section 7 of the Endangered Species Act of 1973 has been initiatedfor the purposes of this EIS (refer to Appendix G-3). A biological opinion has not been rendered at this time.

Soil Conservation Service (SCS) and Agricultural Stabilization and Conservation Service (ASCS)

The SCS has 20 ranch plans in operation in the Planning Unit, and will actively participate with the BLM in the development of an intensive grazing management program. Through the ASCS, the SCS provides assistance to landowners in the area who want to improve their private rangelands. The ASCS provides cost-sharing of fences water developments, erosion control, and vegetation treatment practices, while the SCS provides the technical support in planning, surveying, and designing the projects.

Bureau of Indian Affairs (BIA) and the Navajo Tribe

There are approximately 27,695 acres of Indian land in the Planning Unit. Under provisions of a cooperative agreement between the BLM, the BIA, and the Navajo Tribe, the three agencies and Navajo Tribal Land Board members meet regularly to determine the grazing administration of Tribal and public lands (leased to the Navajo Tribe) on eight grazing allotments of the Planning Unit.

U.S. Geological Survey (USGS) and Office of Surface Mining and Reclamation (OSM)

Surface disturbance associated with development of oil and gas and surface or underground mining activities would affect the implementation of the Proposed Action or

alternative(s). The use and rehabilitation of these disturbed areas must be coordinated between the BLM, the USGS, and OSM.

State Programs

New Mexico Environmental Improvement Division (EID)

The EID, acting as staff to the New Mexico Water Quality Control Commission, has developed a statewide water quality management plan in response to Section 208 of the Federal Clean Water Act of 1977 (P.L. 95217). This plan includes an assessment of non-point sources of sediment and recommends best management practices (BMPs) for controlling sediment from various land uses. The BLM will incorporate these BMPs into its grazing management systems in order to improve the quality of runoff originating on public lands.

State Engineer

The State Engineer is the responsible official for determination of water rights in the Planning Unit. Stock ponds of less than 10 acre-feet capacity do not require a formal water right; however, a water right is required for livestock wells in a designated ground water basin (i.e., the San Juan Basin). Water developments associated with BLM grazing management will be coordinated with the State Engineer's office to ensure compliance with applicable state regulations.

New Mexico Department of Game and Fish (NMDGF)

The wildlife management program of the NMDGF would be directly related to the Proposed Action through the BLM's responsibility to manage wildlife habitat on public lands. The objective of the NMDGF to produce a harvestable surplus of wildlife in future years, especially deer and antelope, is reflected in the Department's Comprehensive Plan. This document incorporates considerable material included in BLM planning efforts throughout the State.

On October 1, 1975, the BLM and the New Mexico Department of Game and Fish entered into a cooperative agreement for management of the Navajo Dam and Reservoir area and the Wildlife Management Area. The BLM is to administer, for multiple use purposes including wildlife habitat management, the various lands under its administration. Under the Colorado River Storage Act, the NMDGF received certain monies for the development and enhancement of wildlife habitat to mitigate habitat losses resulting from the construction and operation of the Navajo Dam and Reservoir. In addition, the BLM will, in cooperation with the NMDGF (1) reserve for wildlife use those federal range grazing privileges (350 AUMs or 1,790 deer yearlong) relinquished from land acquired by the U.S. Fish and Wildlife Service and subsequently transferred to the NMDGF; (2) continue to authrorize the remainder of the federal range grazing capacity available for cattle under existing AMPs (Rosa Community and Middle Mesa Community allotments); (3) retain classification for all federal range suitable for grazing by cattle and wildlife; (4) not introduce big game species or increase authorized livestock use unless by mutual consent; (5) enter into cooperative agreements for land treatment, construction, and maintenance projects on lands administered by the BLM after completion of this grazing EIS; (6) conduct habitat and forage studies necessary for its programs and give the NMDGF pertinent data from these studies; (7) retain for wildlife and other compatible uses all lands except those small tracts set aside

for recreational development; and (8) correlate mineral resource development with wildlife management.

Over the years, the BLM and the NMDGF have exchanged information pertaining to wildlife populations, optimum densities, and areas occupied by various species of big game and other wildlife. This exchange of data has greatly facilitated the preparation of BLM planning documents and other documents required in the management of public lands in the San Juan Planning Unit.

State Historic Preservation Officer (SHPO)

The BLM cultural resource management program operates in accordance with the Code of Federal Regulations Title 36, Part 800, which provides specific procedures for consultation between BLM officials and the SHPO. A Memorandum of Understanding (MOU NMSO-96) between the State of New Mexico through the SHPO and the New Mexico State Office of the BLM became effective on June 29, 1978. This MOU coordinates the provisions of 36 CFR 800 with existing BLM procedures, emphasizing the BLM planning system. The MOU also incorporates procedures for exchanging information with the SHPO concerning cultural resources on BLM-managed lands.

State and Private Land

State and private land comprises 351,712 acres (27 percent) within the boundaries of the Planning Unit. The BLM influences management of, and sets the grazing capacity on unfenced intermingled private and state land on, those allotments with AMPs. The Federal Land Policy and Management Act (FLPMA; 43 U.S.C. 1701 et. seq.) Section 402 (f) states, in part: "Allotment Management Plans shall not refer to livestock operations or range improvements on non-Federal lands except where the non-Federal lands are intermingled with, or, with the consent of the permittee or lessee involved, associated with, the Federal lands subject to the plan."

The BLM issues two types of authorizations for recognizing grazing capacity of privately controlled lands. These are exchange-of-use agreements and percentage on-and-off licenses. Exchange-of-use agreements must be filed by the rancher and approved by the District Manager, and may be issued for periods not to exceed 10 years. Such agreements may be issued to applicants owning or having control of non-public lands that are interspersed with and normally grazed in conjunction with public lands, not to exceed the grazing capacity of such non-public lands. During the term of the agreement, the BLM manages grazing on these non-public lands. Percentage on-and-off licenses are issued and generally restricted to allotments that are used and controlled by one rancher. The BLM determines the proper stocking rate for all lands within the allotment. The rancher is billed only for the grazing capacity of the public lands.

Section 8 of the Public Rangelands Improvements Act (43 U.S.C. 1901 et. seq.) requires consultation, cooperation, and coordination by BLM with lessees, permittees, landowners, the district grazing advisory boards, and any state agencies (refer to Appendix B for BLM Rangland Consultation Policy in New Mexico).

IMPACTS

A display of the impacts of the Proposed Action and alternatives is found in Table 1-4. Further discussion of these impacts is located in Chapter 3.

TABLE 1-3

SUMMARY OF KEY ELEMENTS OF THE PROPOSED ACTION AND ALTERNATIVES

	Existing				PA[a/]				NA			
	No. of Allotmts.	Fed'l Acres	Preference AUMs	Avg. Licensed AUMs	No. of Allotmts.	Fed'l Acres	Preference AUMs	Proposed AUMs	No. of Allotmts.	Fed'l Acres	Preference AUMs	Avg. Licensed AUMs
Livestock Grazing												
Grazing Systems or AMPs	15	240,409	24,724	17,522	136	925,827	108,371	69,335	15	240,409	24,724	17,522
Non-AMPs	122	685,858	83,647	48,624					122	685,858	83,647	48,624
Elimination of Grazing					2	1,082	0	0				
Unallotted	1	642	0	0					1	642	0	0
Totals	138	926,909	108,371	66,146	138	926,909	108,371	69,335	138	926,909	108,371	66,146
Other AUMs												
Wildlife				5,799				5,799				5,799
Wild Horses				0				276				0
Vegetation Treatments												
Chemical Control (acres)		320										
Mechanical Control (acres)		143,349				54,119						
Burning (acres)		Approx. 10,000										
Range Developments												
Fences (miles)		605				9				--		
Wells and Facilities (No.)		57				15				--		
Pipelines (miles)		27				18				--		
Catchments (No.)		10				2				--		
Wildlife waters (No.)		10				45				--		
Cattleguards (No.)		23				7				--		
Springs (No.)		56				7				--		
Dirt Tanks (No.)		384				9				--		

	ELG				MLFP				EORV			
	No. of Allotmts.	Fed'l Acres	Preference AUMs	Proposed AUMs	No. of Allotmts.	Fed'l Acres	Preference AUMs	Proposed AUMs	No. of Allotmts.	Fed'l Acres	Preference AUMs	Proposed AUMs
Livestock Grazing												
Grazing Systems or AMPs	0	0	0	0	136	925,827	108,371	69,335	136	925,827	108,371	42,041
Non-AMPs	0	0	0	0								
Elimination of Grazing	138	926,909	108,371	66,146	2	1,082	0	0	2	1,082	0	0
Unallotted												
Totals	138	926,909	108,371	66,146	138	926,909	108,371	69,335	138	926,909	108,371	42,041
Other AUMs												
Wildlife				5,799				5.799				5.799
Wild Horses				420				276				420
Vegetation Treatments												
Chemical Control (acres)						25.705						
Mechanical Control (acres)						211,879				54,119		
Burning (acres)												
Range Developments												
Fences (miles)		--				9				9		
Wells and Facilities (No.)		--				15				15		
Pipelines (miles)		--				18				18		
Catchments (No.)		--				2				2		
Wildlife waters (No.)		--				45				45		
Cattleguards (No.)		--				7				7		
Springs (No.)		--				7				7		
Dirt Tanks (No.)		--				9				9		

Source: BLM Farmington Resource Area Files, 1980.

Note: [a/] PA - Proposed Action, NA - No Action Alternative, ELG - Elimination of Livestock Grazing Alternative, MLFP - Maximization of Livestock Forage Production Alternative, EORV - Enhancement of Other Resource Values Alternative.

TABLE 1-4

COMPARISON OF MAJOR IMPACTS FOR RESOURCE COMPONENTS -- PROPOSED ACTION AND ALTERNATIVES

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Vegetation							
Production	AUMs produced on public lands	75,410	107,217	76,066	104,458	123,801	107,217
Grassland Aspect							
Sagebrush	Acres		52,639	0	0	129,215	52,639
Pinyon-Juniper	Acres		1,360	0	0	108,249	1,360
Barren	Acres		120	0	0	120	120
Livestock Forage Range Condition							
Good	Acres	203,484	371,721	202,832	328,472	442,422	371,721
Fair	Acres	730,168	673,719	708,051	708,273	626,589	673,719
Poor	Acres	344,969	233,181	367,738	241,876	209,610	233,181
Soils	Acre-feet of sediment yield	1,654	1,316	1,650	1,292	1,351	1,312
Water Resources							
Water Use	Acre-feet		125	91	0	148	58
Decreased Runoff	Acres affected		54,119	0	0	184,477	54,119

TABLE 1-4 (Cont'd)

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Wildlife							
Pronghorn antelope	Yearlong population in numbers	186	373	186	600	373	540
Muledeer	Yearlong population in numbers	1,286	2,591	1,286	5,500	2,591	4,120
	Winter population in numbers	1,691	3,416	1,691	5,900	3,416	5,420
Elk	Yearlong population in numbers	40	80	40	120	80	110
Barbary sheep	Yearlong population in numbers	204	429	350	700	429	680
Upland game bird habitat (510,000 acres)	Trend of habitat quality	Stable	Improvement on about 140,000 acres of poor-fair quality habitat	Stable - declining	General improvement	Deterioration on about 370,000 acres of good quality habitat	Improvement on about 140,000 acres of poor-fair quality habitat
None-Game species birds habitat (1,429,951 acres)	Trend of habitat quality	Stable	Generally stable-improving	Stable - declining	General improvement	Overall deterioration	Generally stable-improving

TABLE 1-4 (Cont'd)

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Wildlife (Cont'd)							
Riparian and wetland habitat (4,893 acres)	Trend of habitat quality	Stable - declining	Stable - improving	Stable - declining	Improving	Stable - declining	Improving
Aquatic habitat (189 riverine miles; 17,469 acres of lakes and reservoirs)	Trend of habitat quality	Stable	Stable - improving	Stable - declining	Stable - improving	Stable - declining	Stable - improving
Wild Horses	Number of animals	23	23	23	35	23	35
	Number of animals	23	23	23	35	23	35
Livestock Grazing							
Livestock AUMs (Licensed Use) on Public Lands		66,146					
short-term	AUMs		69,335	66,146	0	69,335	42,041
long-term	AUMs		90,311	66,146	0	106,748	42,041

TABLE 1-4 (Cont'd)

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Livestock Grazing (Cont'd)							
Allotments	Total Number	138	136	138	0	136	136
	Number - Increased AUMs (Pref./Av. Lic. Use)		26/74	7/0		26/74	5/37
	Number - Decreased AUMs (Pref./Av. Lic. Use)		108/61	131/0	138/138	108/61	131/99
	Number - No change in AUMs (Pref./Av. Lic. Use)		2/1	0/0		2/1	0/0
Forestry							
Timber	Reproduction	Slow decrease	Improvement	Slow decrease	Improvement	Improvement	Improvement
Woodland	Standing volume	Increase	No impact	Increase	Increase	Decrease	No impact
	Future production	Increase	No impact	Increase	Increase	Decrease	No impact
Fire Potential		Increase	Decline	No impact	Increase	Decline	No impact
Recreation	Visitor-days		938,836	919,378	1,008,009	938,836	994,674
	Long-term	603,001					

TABLE 1-4 (Cont'd)

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Wilderness	Inventory Unit NM-010-090	No impact	No impact	No impact	No impact	No impact	No impact
	Inventory Unit NM-010-091	No impact	No impact	No impact	No impact	No impact	No impact
Land Use	Number of allotments by principal use						
	Grazing	136	136	136	0	136	136
	Other Uses	2	2	2	138	2	2
Cultural Resources							
Increase in Data Base	Acres of class III inventories	1,144 sites on file	54,215	0	Trailing areas	211,975	54,215
Increased Potential for Resource Loss							
Vegetation Treatment	No. of sites damaged or destroyed	Est. basin site density 2-90/sq. mi.	Unknown until inventories and AMPs completed	0	0	Unknown until inventories and AMPs completed	Unknown until inventories and AMPs completed
Unauthorized collection & vandalism	Increase in hunter visitor-days (Year 2000	93% of sites studied in poor to mod. condit.	19,458	0	19,458	88,631	75,296

TABLE 1-4 (Cont'd)

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Visual Resources	Acres changed to lower class						
Mgmt. Class II		71,498	No change	No change	No change	No change	No change
Mgmt. Class III		471,884	No change	No change	No change	No change	No change
Mgmt. Class IV		886,569	No change	No change	No change	No change	No change
Social and Economic Conditions							
Livestock Sales from Allotments	Total dollars per year	1,418,550					
Short term (1982)			1,446,240	1,418,550	145,960	1,446,240	1,029,895
Long term			1,823,250	1,418,550	145,960	2,156,520	1,029,895
Herd Size (Cattle and Horses)	Average herd size by size category						
Short term (1982)	Subsistence	14	17	14	3	17	11
	Small Commercial	112	98	112	35	98	84

TABLE 1-4 (Cont'd)

Area of Impact	Unit of Measure	Existing Environment	Proposed Action	No Action Alternative	Elimination of Livestock Grazing Alternative	Maximization of Livestock Forage Production Alternative	Enhancement of Other Resource Values Alternative
Social and Economic Conditions (Cont'd)	Medium Commercial	268	267	268	73	267	199
	Large Commercial	525	478	525	135	478	349
Herd Size (Cattle and Horses)	All	48	48	48	12	48	35
Long term	Subsistence		22	14	3	24	11
	Small Commercial		127	112	35	156	84
	Medium Commercial		328	268	73	362	199
	Large Commercial		598	525	135	688	349
	All		61	48	12	68	35
Herd Size (Sheep and Goats)	Average herd size by all allottees	25					
Short term (1982)			33	25	6	33	20
Long term			36	25	6	46	22
Ranching Population (Three-County Area)	Appropriate number of persons						
Short term		1,070	1,080	1,070	440	1,080	Decreasing
Long term		-	1,110	1,070	440	1,120	1,020

Source: Chapter 3.

CHAPTER 2

AFFECTED ENVIRONMENT

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AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the environmental components of the San Juan Planning Unit that would be affected by implementation of the Proposed Action and/or alternative(s). Components include: physical setting, vegetation, soils, water, air quality, wildlife, wild horses, livestock grazing, forestry, recreation, wilderness, other land uses, cultural resources, visual resources, and social and economic conditions. The length and detail of these descriptions are intended to relate directly to the expected magnitude, intensity, and duration of impacts as presented in Chapter 3.

PHYSICAL SETTING

Climate

The seven stations within the Planning Unit that report climatological data to the National Climatic Center are located at Aztec Ruins National Monument, Bloomfield, Farmington, Fruitland, Lybrook, Navajo Dam, and Otis. Data from these stations for the years of record since 1950 are summarized in Appendices D-1 and D-2.

The average annual precipitation increases generally from west to east and ranges from 7.83 inches at Fruitland to 10.92 inches at Navajo Dam. Yearly precipitation amounts vary from less than one-half to over two times the average. Generally, more than half of the precipitation comes during the warm season (May through October) with major amounts from scattered, localized thunderstorms during July through October.

Temperatures vary from highs that commonly exceed 100°F during June or July to lows of -15°F or below during January or December. The average frost-free period ranges from 137 days per year at Farmington to 174 days per year at Bloomfield. However, the number of frost-free days vary greatly during year to year.

Potential evaporation greatly exceeds precipitation in the Planning Unit. The average evaporation for April through September at Farmington and Navajo Dam is 56 inches and 53 inches respectively.

Topography and Geology

The Planning Unit is located in the eastern part of the Navajo section of the Colorado Plateau physiographic province. Elevations range from a high of 7,585 feet at Snyder Peak to a low of 5,262 feet at the junction of the San Juan and Animas Rivers. There are great differences in elevation from the canyon bottoms to the mesa tops throughout the area; elevations can vary as much as 1,000 feet in a very short distance. The northern and eastern portions of the area are more heavily dissected by canyons than are the southern and eastern portions, which are characterized by a gentle, more rolling topography and smaller drainages. The mesa tops often have good potential for forage production. Allotment boundaries frequently coincide with natural barriers that restrict livestock movement such as steep canyon walls or cliffs.

Three major valleys are located within the area--the San Juan, Animas, and La Plata Valleys. The San Juan is the largest of the three and runs almost the entire width of the area from east to west. The Animas and La Plata Valleys originate in Colorado and intersect the San Juan Valley at Farmington. The Animas runs in a south to southwesterly direction, while the La Plata runs north-south. The valleys are flat and shallow with alluvial bottoms. Visual D shows these and other features.

The slope of the lands within the area is highly variable, ranging from nearly level to gently sloping and undulating on the mesa tops and plateaus, to very steep on the dissected mountain slopes. The slopes generally have either a southerly or westerly exposure, with some local northern exposures. Gradients vary from less than 20 feet per mile in a few of the river channels to more than 400 feet per mile.

VEGETATION

Major Vegetation Types

The seven major native vegetation types (Grassland, Sagebrush, Shadscale, Greasewood, Pinyon-Juniper, Steep and Rocky, and Barren) occurring in the Planning Unit are described below. Determinations of livestock forage range condition on the 1,278,621 acres in the grazing allotments show that 203,484 acres (16 percent) are in good condition, 730,168 acres (57 percent) are in fair condition, and 344,969 acres (27 percent) are in poor condition. The present vegetation cover and condition for each vegetation type on each grazing allotment are shown in Appendix E-4. Trend studies have been initiated on the 15 allotments managed under AMPs. To date, measurements of trend have been made on 119,406 acres in six of these allotments. These measurements show that 81,580 acres (68 percent) are in an upward trend, 22,741 acres (19 percent) are static, and 15,085 acres (13 percent) are trending downward. Appendix E-5 shows details of the current trend on the allotments for which trend determinations have been made. Visual E shows the general distribution of the vegetation types, and Appendix E-6 lists the major plant species found in the Planning Unit.

Mixed stands of both warm- and cool-season grasses and shrubs contribute to the forage production in the Planning Unit. This is the case for all vegetation types throughout the area. The major forage-producing grass and shrub species and the times of their phenological developmental stages are shown in Appendix E-1.

Grassland

Grasslands occupy 43,265 acres (3 percent) of the Planning Unit. About 84 percent of the grassland (36,112 acres) closely resembles shortgrass plains vegetation because of the occurrence of galleta and blue grama as major components.

These grasslands are primarily located in the dry areas west of Farmington, generally occupying flat to gently rolling terrain. The primary grass species include galleta, blue grama, alkali sacaton, and Indian ricegrass. These are interspersed with shrub species such as shadscale, fourwing saltbush, winterfat, broom snakeweed, and black greasewood. Major forb species are Russian thistle, globemallow, dock, soapweed, and various species of buckwheat.

The vegetation cover on these grasslands averages 9.7 percent and ranges from 1 to 25 percent. The production of useable air-dry forage averages 59 pounds per acre per year and ranges from 19 to 195 pounds per acre per year.

Wet meadows occupy 2,102 acres (5 percent of the grassland type). The major species on these areas are inland saltgrass and alkali sacaton, but galleta, blue grama, sand dropseed, sunflowers, Russian thistle and buckwheat are also found. Vegetation cover averages 29 percent in the meadows and ranges from 5 to 81 percent. Production of useable air-dry forage averages 245 pounds per acre per year.

Deteriorated grasslands and abandoned fields within grassland type areas are dominated by half-shrubs or annual weeds. Areas dominated by half-shrubs total 4,033 acres (9 percent of the grassland type) and have average vegetation cover and air-dry useable forage production values of 12 percent and 36 pounds per acre per year, respectively. Broom snakeweed and rabbitbrush are the dominant plants on these areas, but blue grama, galleta, and Indian ricegrass grow interspersed with these half-shrubs.

The area dominated by annual plants totals 496 acres (1 percent of the grassland type) in regions where cultivation or other mechanical disturbance has destroyed most of the perennials. The most frequently encountered plants on these areas are cheatgrass, Russian thistle, and kochia. Small amounts of perennial grasses (maily galleta, alkali sacaton, and Indian ricegrass) are scattered among the annuals. The perennial species cover averages 5 percent and the average useable air-dry production is 5 pounds per acre per year.

Within the grassland type are 522 acres (1 percent) that are dominated by fourwing saltbush. Indian ricegrass and alkali sacaton are the principal grass species on these areas. The vegetation cover averages 7 percent on these areas and 33 pounds per acre per year of useable air dry forage is the average production.

Sagebrush

The sagebrush type occupies 461,064 acres (32 percent of the Planning Unit) and is potentially the most productive type. The topography of areas occupied by sagebrush varies from valley and canyon bottoms to large flat mesa tops. Although the density (number of plants per acre) of sagebrush varies, it is the dominant species on 456,446 acres.

Other shrub species occurring with big sagebrush include rabbitbrush, black greasewood, fourwing saltbush, Mormon tea, and broom snakeweed. Primary grass species are galleta, blue grama, alkali sacaton, Indian ricegrass, squirrel tail, and sand dropseed. The more common forb species are buckwheat, prickly pear cactus, locoweed, Indian paintbrush, penstemon, and tansy mustard.

The average vegetation cover of areas dominated by big sagebrush is 22 percent and ranges from 7 to 47 percent. The production of useable air-dry forage averages 50 pounds per acre per year, with a range of no useable forage to 218 pounds per acre.

Areas totalling 100,830 acres (22 percent of the sagebrush type) have been cabled, chained, brush-cut, or plowed to reduce the density of big sagebrush. On plowed areas, a mixture of cool-season grasses, browse, and forbs have been seeded to provide understory cover. Areas with sufficient quantities of understory forage-producing species received mechanical treatment only. Most projects were successful in reducing the density of sagebrush, stabilizing the soil, and increasing forage production.

The vegetation cover of areas treated by mechanical methods (68,717 acres) averages 16 percent, with a range from 3 to 38 percent. Production of useable air-dry forage on these areas averages 66 pounds per acre per year and ranges from 34 to 144 pounds per acre per year.

Seeding has been done in conjunction with sagebrush control on 32,113 acres. The vegetation cover on these areas averages 17 percent and ranges from 5 to 36 percent. Production on these seeded areas is the highest of all the sagebrush areas, averaging 105 pounds of useable air-dry forage per acre per year.

Within the sagebrush type, there are 4,618 acres dominated by rabbitbrush. This plant grows primarily along sandy drainage bottoms and forms a buffer strip between the washes and areas of big sagebrush dominance. Major shrub species within these areas include Douglas rabbitbrush, rubber rabbitbrush, big sagebrush, and sand sagebrush. Major grass species are Indian ricegrass, galleta grass, and sand dropseed. The most significant forbs are Russian thistle and various species of buckwheat. The average vegetation cover on these areas is 15 percent and the average production of useable air-dry forage is 86 pounds per acre per year.

Shadscale

The shadscale type is located primarily west of Farmington on the dry alkaline flats. This type occupies 16,597 acres (1 percent of the Planning Unit) and is closely associated with the grassland type, but occupies more alkaline soils. The major shrub species other than shadscale are saltbush, mat saltbush, Jones saltbush, sagebrush, and black greasewood. The major

grass species are alkali sacaton and galleta. Forb species include curly dock, Russian thistle, and soapweed.

The vegetation cover of this type averages 11 percent and ranges from 3 to 24 percent. Production of useable air-dry forage averages 47 pounds per acre per year and ranges from 20 to 180 pounds per acre per year.

Greasewood

This type occupies 41,110 acres (3 percent of the Planning Unit) and is found mainly on alkaline soils in drainage bottoms. Many of these areas are subirrigated and provide ample moisture for plant growth. Major shrub species are black greasewood, sagebrush, fourwing saltbush, and salt cedar. The major grass species are alkali sacaton, galleta, and western wheatgrass. Forb species include Russian thistle, various species of buckwheat, and curly dock.

The vegetation cover of this type averages 19 percent and ranges from 8 to 43 percent. Production averages 77 pounds per acre per year and ranges from 12 to 360 pounds per acre per year of useable air-dry forage.

Pinyon-Juniper

The pinyon-juniper vegetation type occupies more acreage than any other type in the Planning Unit (524,832 acres or 37 percent). The areas occupied by this type occur generally along the edges of mesas and on the sideslopes of hills. The major tree species in this type are pinyon pine and Utah juniper. More junipers are found on south- and west-facing slopes, while pinyons make up the majority of the stands on north-facing slopes. This type produces a large amount of browse in young stands; however, shading in older stands prevents much understory development.

Ponderosa pine, Douglas fir, and narrowleaf cottonwood are found with the pinyon and juniper in the heads of canyons, where temperatures are cooler and there is more moisture for plant growth. Browse species occurring in this type include antelope bitterbrush, mountain mahogany, big sagebrush, serviceberry, Mormon tea, oakbrush, and rabbitbrush. Grass species include Indian ricegrass, galleta, mutton bluegrass, Junegrass, blue grama, and western wheatgrass.

The pinyon-juniper type averages 21 percent vegetation cover and ranges from 7 percent at the drier locations to 64 percent on more favorable sites. Production of useable air-dry forage averages 31 pounds per acre per year and ranges from 4 to 171 pounds per acre per year.

The potentially more productive sites within this type have been chained or chained and seeded to reduce the overstory and allow more production from browse and forage species. Areas that have only been chained total 16,720 acres; here the vegetation cover averages 20 percent and production of useable air-dry forage averages 88 pounds per acre per year. Seeding was used in conjunction with chaining on 10,430 acres; vegetation cover on these areas averages 19 percent and production of useable air-dry forage averages 105 pounds per acre per year.

Steep and Rocky

This type occupies 147,578 acres (10 percent of the Planning Unit) and generally occurs on slopes between flat mesa and canyon bottoms. These slopes vary from 50 to 100 percent with narrow benches at various levels along the slope. The soils are extremely shallow and rocky, and most organic matter is rapidly washed down to the canyon bottoms with each rainfall. A large amount of browse occurs on these slopes and provides excellent deer and Barbary sheep forage.

Tree species found in this type are mainly pinyon pine and Utah juniper, and shrub species include antelope bitterbrush, mountain mahogany, dwarf rabbitbrush, serviceberry, Mormon tea, and cliff fendlerbush. Grass species are not common but include Indian ricegrass, little bluestem, galleta, bluegrass, and blue grama. The vegetation cover averages 16 percent and the production of useable air-dry forage averages 15 pounds per acre per year.

Barren

The barren vegetation type occupies 44,142 acres on badland areas and wash bottoms that support very little vegetation. The soils are either derived from shale and are extremely variable or are sandy. The more common species of plants found are rabbitbrush, shadscale, black greasewood, bud sage, and buckwheat. The average vegetation cover is 1 percent and the average production is 2 pounds per acre per year.

Cropland, Urban Areas, Open Water, and Riverbeds

The remaining 151,363 acres (11 percent of the Planning Unit) consist of lands not in grazing allotments. The primary use of these lands is as cropland that consists primarily of alfalfa fields and permanent grass pasture. The amount of cropland is rapidly decreasing because of the expansion of urban development.

Riparian Sites

Three perennial rivers and several major intermittent drainages cross the Planning Unit and provide over 180 miles of streamside on which riparian vegetation has developed. The major species along these rivers and drainages include cottonwoods, salt cedar, Russian olive, big sagebrush, fourwing saltbush, black greasewood, various sedge, rush, and grass species, and numerous forbs. Within the grazing allotments there is a total of 1,979 acres containing riparian vegetation of which 1,442 acres are public lands. Cottonwood trees are dominant on 37 acres. The remaining 1,942 acres are mapped as wet meadows and are considered to be riparian because of large numbers of salt cedar and Russian olive trees in the vegetation complex. A detailed description of these sites is presented in the San Juan River Management Plan on file at the BLM Farmington Area Office.

Poisonous Plants

Poisonous plants are a constant although not generally serious problem. If care is taken to avoid areas of poisonous plants during their toxic period, livestock losses and sickness can be avoided. Appendix E-7 provides information on the various poisonous plants of the Planning Unit.

Threatened or Endangered Plant Species

Two species of cactus on the federal threatened or endangered list occur within the Planning Unit. Knowlton cactus (Pediocactus knowltonii) is listed as endangered (Federal Register, Vol. 44, No. 210, Oct. 29, 1979). The only known population of Knowlton cactus is in the north-central part of the Planning Unit (Martin, et. al., 1978). This population is growing on a hillside in gravelly, sandy loam soils. It occurs in association with stunted pinyon trees and Bigelow sagebrush. The cactus plants are small (up to 1.5 inches tall and 0.75 inch in diameter) and are usually found growing under shrubs or trees and between alluvial rocks. The steepness of the hillside, sparceness of forage, and presence of better grazing areas nearby combine to make the area where this population is found unattractive to livestock. This limited use of the area by livestock and the protection afforded the cactus plants by shrubs, trees, and rocks result in the Knowlton cactus being virtually unaffected by livestock.

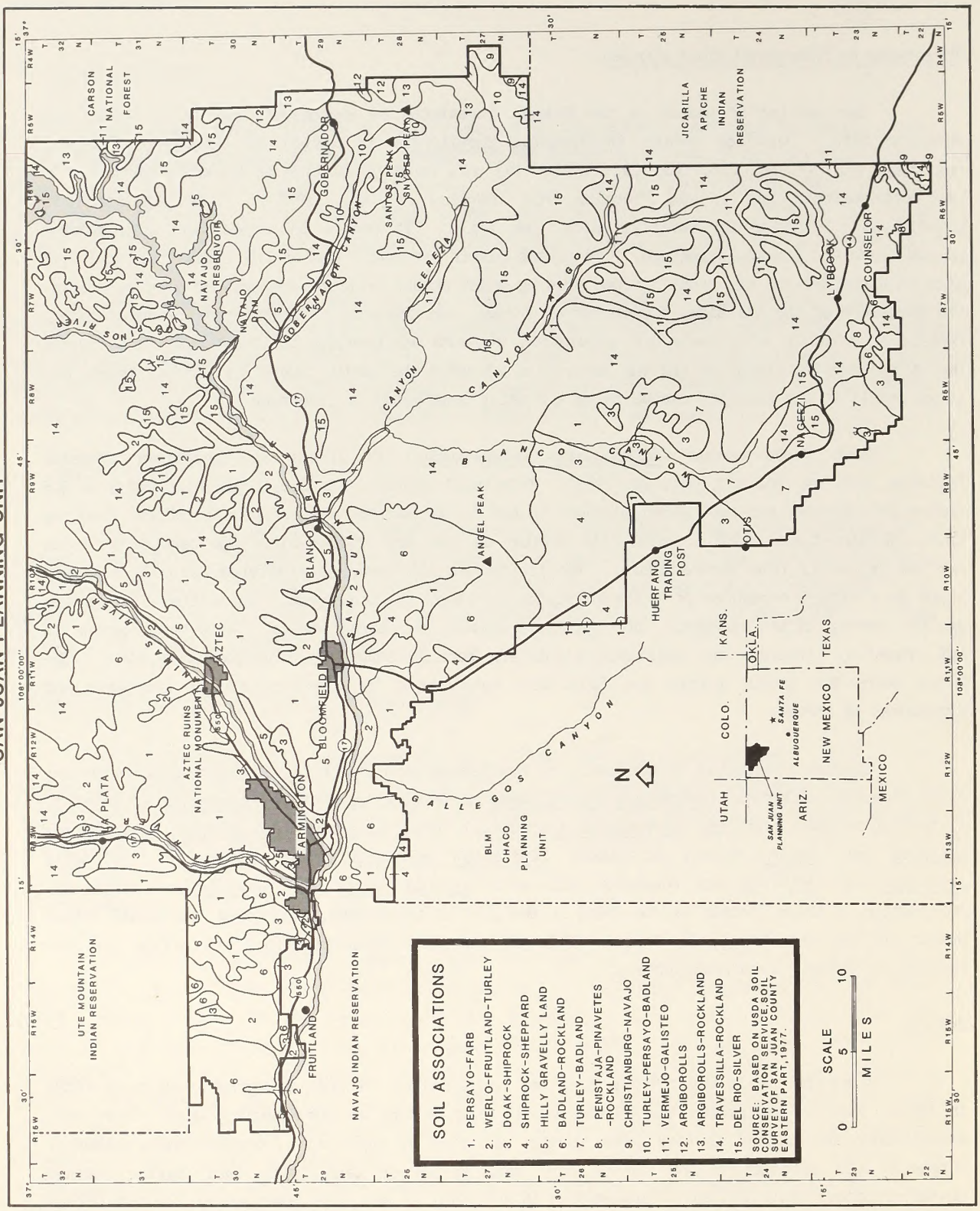
Mesa Verde cactus (Sclerocactus mesae-verdae) is listed as threatened (Federal Register, Vol. 44, No. 211, Oct. 30, 1979). This small cactus (2 to 2.5 inches high and 3 to 3.5 inches in diameter) has been found adjacent to and in the extreme western portion of the Planning Unit. Martin et.al. (1978) describe its habitat as low, dry, barren hills and benches in soils derived primarily from Mancos Shale. The plants usually occur as scattered, usually solitary stems on southern exposures of variable slopes as steep as 90 percent. Associated species are galleta grass, Indian ricegrass, and shadscale growing in sparse stands. Mesa Verde cactus is not grazed by livestock and individual plants are rarely damaged by livestock trampling. The sites where the cactus plants are found are rarely used by livestock due to steepness and sparceness of forage.

Species identified by the State of New Mexico as rare or having restricted range are small-flowered milkvetch (Astragalus nuttallianus), Arobles milkvetch (Astragalus oocalycis), littleleaf mountain mahogany (Cercocarpus intricatus), Tracy bluegrass (Poa tracyi), Sclerocactus whipplei var. heilii (ncn), willowweed (Epilobium halleanum), Arizona gumweed (Grindelia arizonica var. dentata), and roughstem mule ears (Wyethia scabra var. canescens). Additional information on these species can be found in the list of threatened, endangered, rare, and unique plants of the San Juan-Chaco Area on file at the BLM Albuquerque District Office and the Farmington Resource Area Headquarters.

SOILS

A general soils map for the area was completed by the Soil Conservation Service (SCS) in 1977. Map 2-1 delineates the 15 major soil associations in the Planning Unit; these soil associations are grouped as they occur on the landscape in distinctive, proportionate patterns. Within a soil association are two or more soil series or land types, each having defined characteristics. Detailed soils information is available at the BLM Albuquerque District Office and Farmington Resource Area Office, and at the SCS office in Aztec.

Table 2-1 defines the slope classes mentioned in the narrative descriptions of soil associations given below. A short description of each soil association follows and should be used in conjunction with Appendices F-1 and F-2 which give additional, more detailed information for each soil association.


SAN JUAN PLANNING UNIT
SOIL ASSOCIATIONS
1. PERSAYO-FARB
2. WERLO-FRUITLAND-TURLEY
3. DOAK-SHIPROCK
4. SHIPROCK-SHEPPARD
5. HILLY GRAVELLY LAND
6. BADLAND-ROCKLAND
7. TURLEY-BADLAND
8. PENISTAJA-PINAVETES -ROCKLAND
9. CHRISTIANBURG-NAVAJO
10. TURLEY-PERSAYO-BADLAND
11. VERMEJO-GALISTEO
12. ARGIBOROLLS
13. ARGIBOROLLS-ROCKLAND
14. TRAVESSILLA-ROCKLAND
15. DEL RIO-SILVER
SOURCE: BASED ON USDA SOIL CONSERVATION SERVICE, SOIL SURVEY OF SAN JUAN COUNTY EASTERN PART, 1977.
SCALE
0 5 10
MILES
UTE MOUNTAIN INDIAN RESERVATION
NAVAJO INDIAN RESERVATION
CARSON NATIONAL FOREST
JICARILLA APACHE INDIAN RESERVATION
AZTEC RUINS NATIONAL MONUMENT
FARMINGTON
AZTEC
BLOOMFIELD
FRUITLAND
PLATA
BLANCO
GOBERNADOR
NAVAJO RESERVOIR
NAVAJO DAM
SANTOS PEAK
SAN JOSE PEAK
ANGEL PEAK
HUERFANO TRADING POST
OTIS
NAGEEZI
LYBROOK
COUNSELOR
SAN JUAN RIVER
LA PLATA RIVER
ANIMAS RIVER
SAN JUAN CANYON
GALLEGOS CANYON
CEREAL CANYON
CANYON LARGO
BLM CHACO PLANNING UNIT
UTAH
COLO.
KANS.
OKLA.
TEXAS
NEW MEXICO
ARIZ.
MEXICO
SANTA FE
ALBUQUERQUE
SAN JUAN PLANNING UNIT
N

MAP 2-1

Total existing sediment yield for the Planning Unit is 1,654 acre-feet per year. Appendix F-3 provides allotment-by allotment sediment yield information.

Table 2-1

Slope Classes

	Percent Slope
Nearly level or level	0 to 2
Gently sloping; Undulating	2 to 5
Moderately sloping; Gently rolling	5 to 9
Strongly sloping; Rolling	9 to 15
Moderately steep; Hilly	15 to 30
Steep	30 to 50
Very steep	50 to 75
Extremely steep	75 plus

Source: Soil Conservation Service, 1977.

1. Valley bottoms, floodplains, and terraces: Vermejo-Galisteo; Christianburg-Navajo; Werlow-Fruitland-Turley.

These soil associations occur adjacent to intermittent drainages and along river valleys. They are developing in fine-to-moderately coarse-textured alluvium from sandstone and shale. Soils are deep (over 40 inches) and have surface textures that range from loam to clay. Subsoil or subsurface material varies in texture from sandy loam to clay, and substratum material may include gravel and cobble. Water table levels generally fluctuate between 2 and 7 feet. The soils are easily eroded, and deep, vertical-walled gullies occur in the immediate valley bottoms. Gravelly alluvium generally forms the divide between the valley bottoms and the uplands.

Inclusion of small areas with poor drainage and with salt accumulations are scattered throughout these soils. The fine-textured soils are usually alkali-affected and have slow permeability. Water table, alkalinity, shrink-swell, and piping hazard are the primary limitations to development and use of these soils.

2. Gently sloping to undulating mesas, upland slopes and alluvial fans: Penistaja-Pinavetes-Rockland; Del Rio-Silver; Shiprock-Sheppard; Doak-Shiprock.

These soils are developing in alluvial and wind-blown deposits on ancient stream terraces or alluvial fans, and deposits are relatively deep over sandstone or shale. Geologic erosion has left areas of these soils on elevated mesas and sideslopes. Surface textures range from loamy sand to light clay loam, and substratums range in texture from loam to sand. Soils are over 60 inches in depth, with moderate to rapid permeability. Inclusions of shallow soils on sandstone or shale, soils with gravelly substrata, alkali-affected areas, and Rockland and Badland are present in small amounts.

3. Gently to strongly sloping and undulating upland hillsides, valley sideslopes, floodplains, and alluvial fans: Turley Persayo-Badland; Turley-Badland; Persayo-Farb; Hilly Gravelley Land.

These soils are developing on residual sandstone or shale, in alluvium from those same sources, or in deep eolian sands. In general, the shallow and moderately deep soils (less than 40 inches deep over bedrock) are developing in the upland areas on hillsides and valley sideslopes. The deep, finer-textured soils usually occur on the intermittent floodplains and alluvial fans. Surface textures range from fine sand to clay, while substratums range from shale or sandstone bedrock to clay. Permeability is slow to moderate in the finer-textured soils, while coarser-textured soils have moderate to rapid permeability. Correspondingly, the coarser-textured soils have low water holding capacity and are much more susceptible to wind erosion. High runoff rates occur on the shallow, clayey soils. Small inclusions of alkali-affected soils and very steep rock outcrop and escarpments are present. Gravelly, stratified alluvial soils also occur, particularly in the intermittent floodplains.

4. Moderately sloping to steep rough broken land, ridges, and canyon sides, with soils that are usually cobbly and stony: Argiborolls; Argiborolls-Rockland.

These soils are developing materials weathered from sedimentary rocks, primarily sandstone and shale. They are moderately deep to deep, and surface textures range from cobbly clay loam to cobbly stony sandy loam. Subsurface and subsoil textures range from cobbly or stony sandy clay loam to clay. Substratums are shale or sandstone bedrock at depths usually less than 50 inches. Permeability is slow to moderate. Inclusions of Rockland are common, and soils in the narrow valley areas are typically non-stony and deep. These areas are not extensive. Elevations range from 6,200 feet to 8,000 feet.

5. Moderately sloping to steep canyon sides, rough broken land with narrow valley floors, and rockland: Travessilla-Rockland.

This association is dominated by rough, broken topography and Rockland. The Rockland includes escarpments, steep canyon walls, rocky ridgetops, rock slides, rock ledges, and steep breaks, all of which are dominated by rock outcrop and small areas of highly variable soil. Parent materials are predominantly sandstone and shale. Soils in the narrow valley bottoms are deep and highly variable. They include the Billings soils with clayey textures and slow permeability. Travessilla and Bond soils characterize the shallow soils on moderately steep and rolling upland benches, sideslopes, and mesa tops. They have sandy textures and moderate to rapid permeability over sandstone. Scattered inclusions of Badland and Gullied land are part of the landscape.

6. Gently sloping to very steep sideslopes on nearly barren sandstone and shale exposures: Badland-Rockland.

This association is the largest in San Juan County. Topography ranges from nearly level, narrow, alluvial valley bottoms and rolling hills to very steep slopes on escarpments and breaks. It occurs where nearly barren exposures of sandstone and shale are prevalent. Badland is the most extensive land type and is forming in soft shale at differing stages of weathering. Soils in the narrow valley bottoms are usually stratified and vary widely in texture. Rockland

includes escarpments, breaks, and steep mesa sideslopes. Small areas of highly variable soils are scattered throughout the Rockland. There are numerous intermittent drainage channels, and low intake rates and very slow permeability may induce high runoff after normal rains. Much of the area is salt- or alkali-affected.

WATER RESOURCES

Surface Water

The entire Planning Unit lies in the San Juan River Basin in northwestern New Mexico. The San Juan River is a major tributary to the Colorado River in the Upper Colorado Basin. Streamflow in the San Juan River and other perennial streams passing through the Planning Unit (Animas, La Plata, Los Pinos Rivers) originates high in the San Juan and La Plata mountains of southwestern Colorado. Streamflow and water quality data for these streams can be found in the USGS annual publication, Water Resources Data for New Mexico.

The Planning Unit contributes very little streamflow to the San Juan River. Annual precipitation varies from 8 to 12 inches, and surface water usually occurs as ephemeral streamflow following local showers. Sparse vegetative cover results in rapid runoff during intense thunderstorms; however, the local nature of these storms precludes them from being a significant source of streamflow for the San Juan River. Ephemeral flows usually disappear into sandy channel bottoms a few miles downstream of the storm event. Major ephemeral drainages in the Planning Unit include Canyon Largo, Blanco Canyon, Gobernador Canyon, and Cereza Canyon.

The primary hydrologic process which would be affected by grazing management and vegetation treatment is the interception, infiltration, and runoff of precipitation during intense summer thunderstorms. Present rates of runoff have been estimated for selected watersheds in the Planning Unit (Table 2-2) using the SCS Curve Number Methodology (SCS, 1972). These estimates represent the runoff to be expected from a 10-year, 6-hour rainstorm on each of the selected watersheds.

The water quality of surface runoff in the Planning Unit is poor. Frail lands, sparse vegetative cover, highly erosive and saline soils, and rapid runoff produce surface water which is high in suspended and dissolved solids. Surface runoff in the area usually contains greater than 10,000 milligrams per liter (mg/l) of suspended solids and greater than 1,000 mg/l of dissolved solids. For this reason, surface runoff is often unsuitable for most uses. The exact quality of runoff in the Planning Unit cannot be estimated; however, estimates of sediment yields (Appendix F-3) provide an indication of which areas can be expected to produce the poorest water quality.

Ground Water

A general description of the ground water resources of the Planning Unit is provided in the Star Lake-Bisti Regional Coal FES (USDI, BLM, 1979d). More detailed information is contained in BLM planning documents. The location, areal extent, depth, elevation, and thickness of bedrock aquifers have been described by Stone and Mizell (1978). Recharge areas, ground water flow, and water quality characteristics of the major aquifers have been described by Lyford and Frenzel (1978).

TABLE 2-2

RUNOFF ESTIMATES FOR THE SAN JUAN PLANNING UNIT

Watershed Name (Allotment No.)	Drainage Area (sq. mi.)	SCS Curve Number	Peak Runoff 10-year, 6-hour storm: 1.4 Inches Cubic Feet per Second (CFS)	Inches
Norton Flats (5008)	4.63	90.8	2,700	0.65
La Plata Trib. (5017)	0.41	87.2	477	0.48
Sandstone Canyon (5052)	6.25	86.7	2,690	0.45
Carracas Mesa (5058)	0.74	88.0	344	0.51
Blanco Wash Trib. (5077)	0.67	78.8	145	0.21
Laguna Seca Mesa (5105)	1.06	89.0	1,290	0.56
Fresno Canyon (5106)	3.11	90.3	1,780	0.62
Crow Mesa (5118)	6.11	89.2	3,170	0.57

Source: Based on BLM Grazing Files, 1977-79.

Deep aquifers in the Planning Unit produce water at some pressure (i.e., water levels often rise to near the surface); however, the quality of these aquifers is moderate (2,000-4,000 mg/l), and the excessive depths preclude their development for livestock watering. Most livestock wells tap local channel alluvium or shallow Tertiary sandstones. These aquifers frequently produce better quality water; however, yields are never great (less than 50 gallons per minute).

Water Use

Water is used for domestic purposes, municipal and industrial supply, irrigation, livestock and wildlife watering, and mining operations in the Planning Unit. The consumptive water use associated with grazing on public lands is presently estimated at 91 acre-feet per year (based on a consumptive use of 15 gallons per animal unit per day). This water is provided by stock ponds with less than 10 acre-feet of storage, which do not require a formal water right. This water is also provided by low-yield livestock wells which require a water right from the State Engineer, because the Planning Unit is in a designated ground water basin. High salt concentrations render water quality marginal and even unsuitable in most areas; however, it is the only water available.

AIR QUALITY

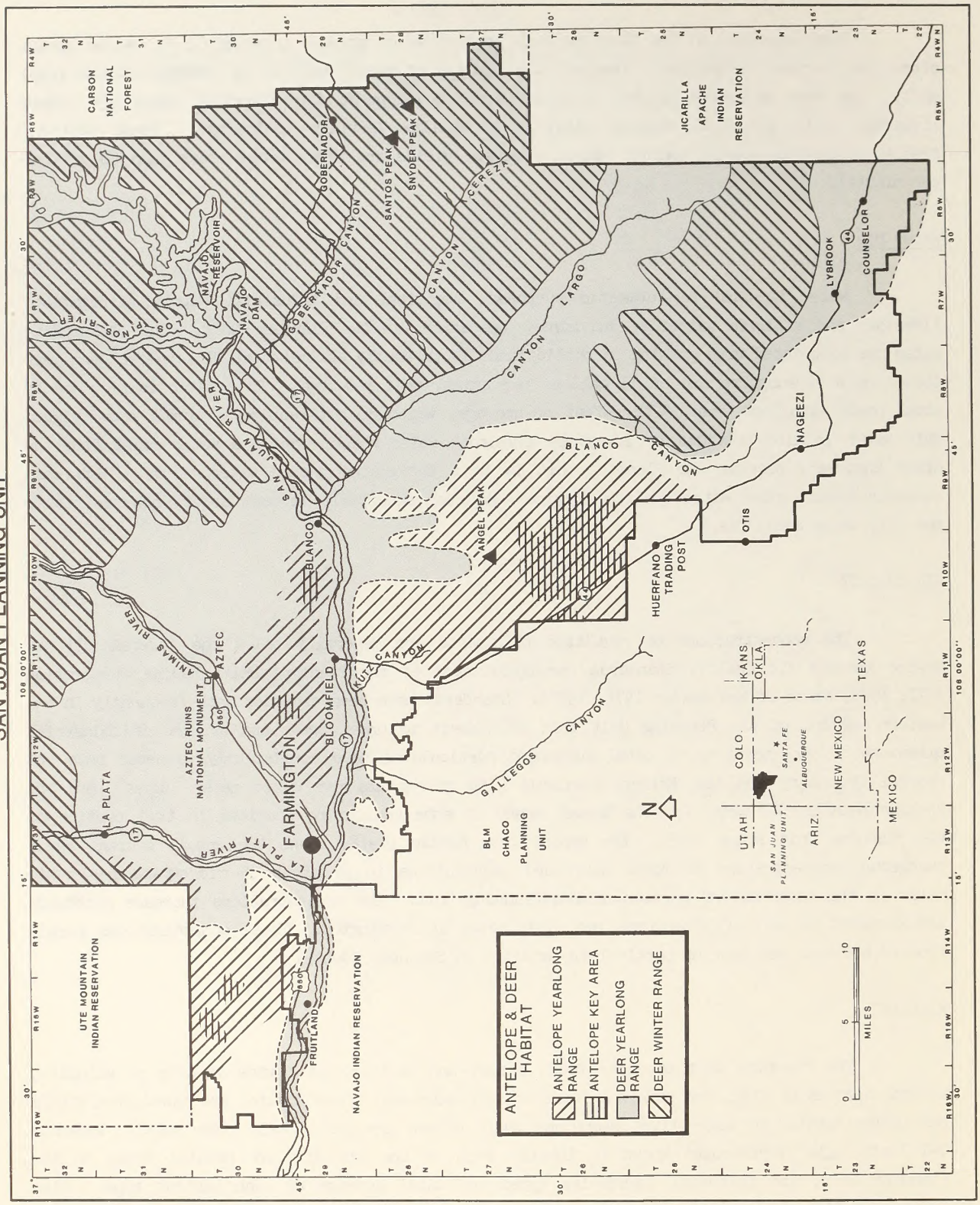
The concentrations of regulated pollutants are generally below the Federal and New Mexico Ambient Air Quality Standards throughout most of the Planning Unit (Radian Corporation 1977, 1978; State of New Mexico 1976, 1977). Standards have been exceeded most frequently in the western portion of the Planning Unit that is closest to urban areas and sources of industrial emissions. Concentrations of total suspended particulates have consistently exceeded both the Federal Secondary and New Mexico standards [150 micrograms per cubic meter (ug/m^3) for the 24-hour mean and 60 ug/m^3 for the annual mean] at some monitoring stations in this portion of the Planning Unit since 1975. The report from Radian (1978) shows the annual average rural background concentration of total suspended particulates to be about 35 micrograms per cubic meter in the southeastern portion of the Planning Unit. The concentrations increase northward and westward to over 60 micrograms per cubic meter at Farmington. These concentrations result from 23,000 tons per year of particulate emission in San Juan County.

WILDLIFE

The Planning Unit provides food, water, and shelter for a wide variety of wildlife, several species of fish, and numerous forms of invertebrates. Some species are associated with a particular habitat or vegetative assemblage while others are more widely distributed. Appendix G-1 lists major vertebrates known to inhabit each of the six wildlife habitat types in the Planning Unit, and principal vegetative types and total acreage of each habitat type. Nine species of fish and wildlife which are considered to be threatened or endangered by the federal government or the New Mexico Department of Game and Fish are listed in Appendix G-2.

Big Game Species

Major wildlife species that may be affected by a grazing management program are four species generally classified as big game: pronghorn antelope, mule deer, elk, and Barbary sheep. Their ranges are depicted on Maps 2-2 and 2-3.


SAN JUAN PLANNING UNIT
CARSON NATIONAL FOREST
JICARILLA APACHE INDIAN RESERVATION
UTE MOUNTAIN INDIAN RESERVATION
NAVAJO INDIAN RESERVATION
BLM CHACO PLANNING UNIT
FARMINGTON
AZTEC
BLOOMFIELD
AZTEC RUINS NATIONAL MONUMENT
LA PLATA
FRUITLAND
BLANCO
NAGEEZI
LYBROOK
COUNSELOR
OTIS
HUERFANO TRADING POST
GOBERNADOR
SANTOS PEAK
SNYDER PEAK
ANGEL PEAK
CANYON LARGO
BLANCO CANYON
GALLEGOS CANYON
KUTZ CANYON
NAVAJO RESERVOIR
NAVAJO DAM
LOS PINOS RIVER
SAN JUAN RIVER
ANIMAS RIVER
LA PLATA RIVER
UTAH
COLO.
KANS.
OKLA.
NEW MEXICO
TEXAS
ARIZ.
MEXICO
SANTA FE
ALBUQUERQUE
SAN JUAN PLANNING UNIT
N
ANTELOPE & DEER HABITAT
ANTELOPE YEARLONG RANGE
ANTELOPE KEY AREA
DEER YEARLONG RANGE
DEER WINTER RANGE
0 5 10
MILES

MAP 2-2

Antelope

Pronghorn antelope, presently estimated at 186 head on public lands, are limited to scattered areas of sparsely vegetated, flat to gently rolling terrain northwest and southeast of Farmington (Map 2-2). This habitat covers approximately 303,200 acres (USDI, BLM, 1979f). According to a BLM fecal analysis (USDI, BLM, 1978f), the diet of these animals consists primarily of browse species (fourwing saltbush, mountain mahogany, sagebrush), supplemented by grasses (galleta grass, blue grama, crested wheatgrass) and forbs (larkspur, globemallow, buttercups, mustards).

Considering the area of available habitat and actual number of animals, the antelope population is small. There are probably many factors inhibiting the growth of these scattered herds, including deficiencies in specific dietary needs (especially during pregnancy and nursing periods), poaching, and unknown factors.

The greatest competitors with antelope for forage are livestock. Dietary overlap is greatest during the spring months when livestock consume forbs and grasses that antelope require during the critical spring reproductive period.

Deer

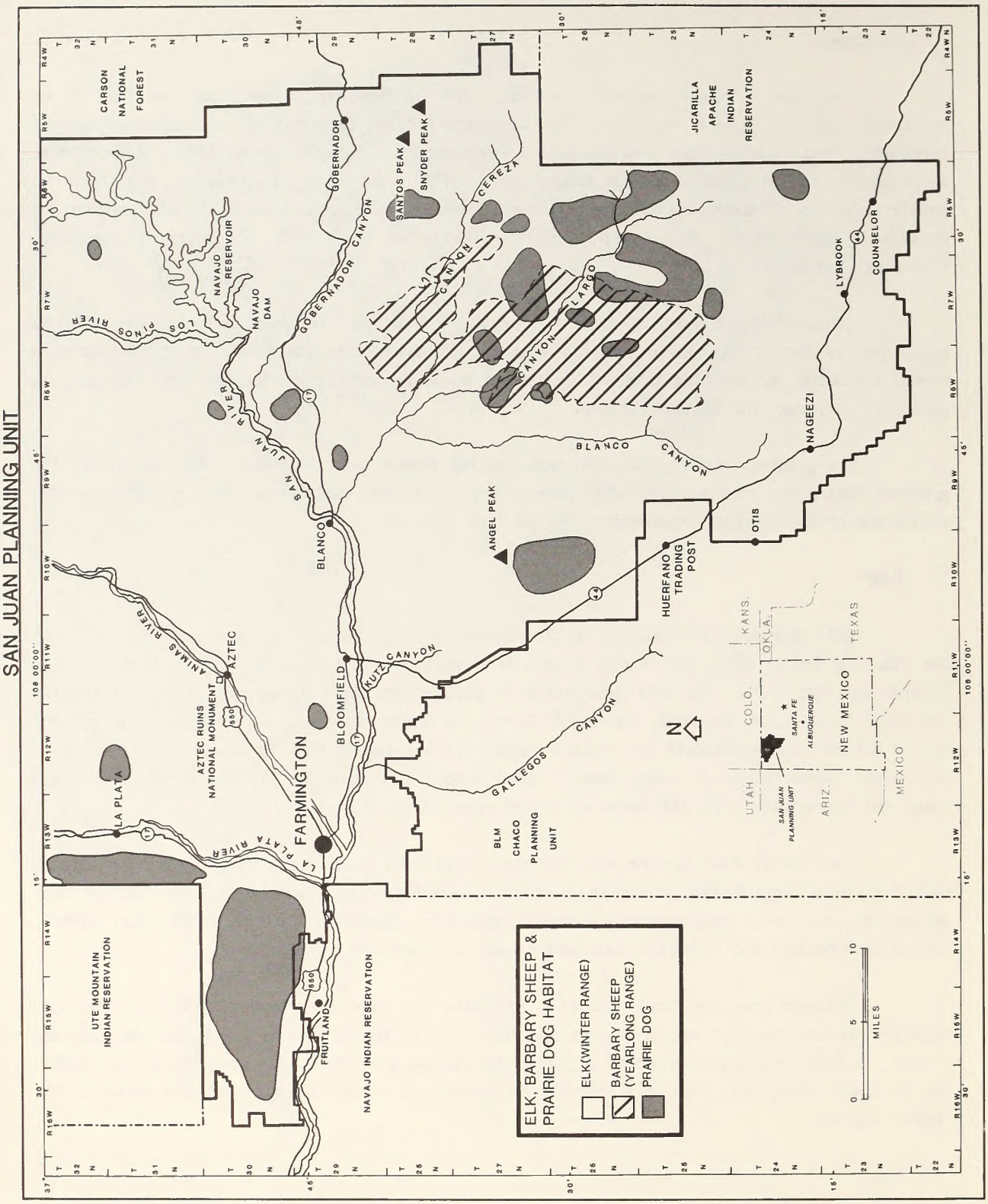
Mule deer are most numerous in the northern and eastern pinyon-juniper covered hills of the Planning Unit. They are nearly absent from western lands adjacent to the Navajo Indian Reservation (Map 2-2). The deer population on public land in the Planning Unit is currently estimated to be 1,286 yearlong, and 1,691 during the winter when animals from Colorado and the Carson National Forest migrate into winter ranges in the Planning Unit to escape the deeper snows and colder temperatures of those areas. Deer occupy approximately 979,040 acres of yearlong range and approximately 501,000 acres of winter range (USDI, BLM, 1979f).

Deer rarely feed further than 200 yards from cover. According to a BLM fecal analysis, deer consume a large amount of browse (sagebrush, serviceberry, mountain mahogany, bitterbrush, skunkbrush, and oak), supplemented by small amounts of grasses and forbs (USDI, BLM, 1979f). Cool-season grasses and forbs are important forage to fawns and nursing does.

Evidence from the fecal analysis, indicates that deer compete with livestock and other wildlife species for cool-season grasses and forbs in the spring and for browse in the fall and winter. Dietary overlap is greatest during winter months when vegetative productivity is lowest, and at lower elevations where deer migrate to escape the colder temperatures and snows of the higher regions.

Elk

Primarily during the winter months, approximately 40 elk occupy the northern portion of the Planning Unit (Map 2-3). Elk habitat covers about 88,640 acres. According to a BLM fecal analysis, (USDI, BLM, 1979f) elk have a diet similar to that described above for deer, except elk consume greater amounts of grasses throughout the year, especially during winter. These grasses include Indian ricegrass, bluegrasses, western wheatgrass, and crested wheatgrass. This diet may be supplemented by serviceberry, mountain mahogany, oak, rabbitbrush, bitterbrush, and sagebrush.


SAN JUAN PLANNING UNIT
CARSON NATIONAL FOREST
JICARILLA APACHE INDIAN RESERVATION
UTE MOUNTAIN INDIAN RESERVATION
NAVAJO INDIAN RESERVATION
NAVAJO RESERVOIR
NAVAJO DAM
LOS PINOS RIVER
SAN JUAN RIVER
GOBERNADOR CANYON
GOBERNADOR
SANTOS PEAK
SNYDER PEAK
CEREZA CANYON
CANYON LARGO
BLANCO CANYON
ANGEL PEAK
NAGEEZI
LYBROOK
COUNSELOR
OTIS
HUERFANO TRADING POST
BLANCO
BLOOMFIELD
FARMINGTON
AZTEC
AZTEC RUINS NATIONAL MONUMENT
ANIMAS RIVER
LA PLATA
LA PLATA RIVER
FRUITLAND
KUTZ CANYON
GALLEGOS CANYON
BLM CHACO PLANNING UNIT
ELK, BARBARY SHEEP & PRAIRIE DOG HABITAT
ELK(WINTER RANGE)
BARBARY SHEEP (YEARLONG RANGE)
PRAIRIE DOG
MILES
N
COLO.
KANS.
OKLA.
TEXAS
NEW MEXICO
ARIZ.
UTAH
MEXICO
SANTA FE
ALBUQUERQUE
SAN JUAN PLANNING UNIT

MAP 2-3

Barbary sheep

Barbary sheep numbered 21 head when first introduced into the Largo Canyon area (Map 2-3) in 1956; their present estimated population on public land is 204 individuals. The total habitat occupied by Barbary sheep covers about 82,950 acres. A BLM fecal analysis (USDI, BLM, 1979f) indicates that the diet of this species consists largely of browse species (serviceberry, mountain mahogany, sage, oak), supplemented by some grasses and forbs. The importance of grasses and forbs increases during the spring months. The wide range of forage plants included in the diet, coupled with the high frequency of multiple births (twins and triplets) and the sheep's ability to breed throughout the year, make the Barbary sheep an aggressive, pioneering species.

Upland Game Species

Upland game species occupy about 510,000 acres of the Planning Unit, primarily centered along rivers and lakes and in scattered upland wooded and shrub areas. Species include Merriam's turkey, mourning dove, ring-necked pheasant, scaled and Gambel's quail, and bandtailed pigeon. They are typically summer or yearlong residents. The chukar was introduced into San Juan County in 1957, but little quantitative data is available to determine the degree of success of this population.

Non-Game Species

There are many species of mammals and birds found throughout the 1,429,951 acres of the Planning Unit that are not discussed here under other headings. The mammals include bats, shrews, skunks, coyotes, bobcats and mountain lions, fox, squirrels and gophers, numerous mice and rats, and rabbits. Many species of mammals, especially rodents, enter the diet of predator species found in the Planning Unit. The prairie dog, which is utilized by the black-footed ferret as food, is found in scattered areas throughout the Planning Unit (Map 2-3).

The non-game birds are represented by numerous wading birds, passerine songbirds, swallows, raptors and woodpeckers. Reptiles are represented by several species of snakes and lizards and a single species of turtle. Seven species of amphibians are known from the aquatic and riparian habitats.

Riparian and Wetland Habitats

The riparian and wetland habitat, which covers 4,893 acres of land, of which 1,979 acres are in grazing allotments, is composed primarily of narrow lands which border lakes and riverine areas of the Planning Unit. These areas form a transition zone habitat between the aquatic medium and the dry terrestrial upland habitats. In undisturbed conditions, the vegetation is represented by a large amount of foliage and shelters numerous wildlife species. The composition of the wildlife is the most diverse in the Planning Unit, (USDI, BLM, 1979f), containing elements which utilize the aquatic medium as well as those that are also found in the upland areas.

Aquatic Habitat

Fish are the dominant form in the aquatic habitat, especially in riverine areas. The San Juan River and its tributaries provide habitat for 24 species of fish (Appendix G-1), including two species considered to be threatened or endangered by the state and federal governments (Appendix G-2). This habitat includes about 189 miles of streams and rivers and 17,469 acres of lakes and reservoirs in the Planning Unit.

The waters of the Planning Unit support excellent cold- and warm-water fisheries. The cold-water fishery covers about 17,000 acres of lake and nearly 75 miles of riverine habitats (USDI, BLM, 1979f). Considered to be one of the best in the state, it is supported by the Navajo Reservoir, the San Juan River below Navajo Dam, and the tributary Animas and La Plata Rivers. Such species as the rainbow (or kamloops), brown, and cutthroat trout; the Dolly Varden, and the kokanee and coho salmon are frequently taken game fish. The rainbow trout, brown trout, and kokanee salmon were introduced by the New Mexico Department of Game and Fish. Warm-water fishing is supported by about 50 miles of the lower reaches of the San Juan River. Frequently taken game species include the channel and blue catfish, black bullhead, bluegill carp, green sunfish, and small and largemouth bass.

Numerous species of ducks and geese are found in the rivers, streams and upland reservoirs of the Planning Unit (Appendix G-1). These birds are characteristic of species found in both the central and Pacific flyways.

Threatened or Endangered Species

Nine species of mammals, birds, and fish considered to be threatened or endangered by either the federal government or the New Mexico Department of Game and Fish are presented in Appendix G-2. Of these, four are considered to be endangered: the black-footed ferret, bald eagle, peregrine falcon, and Colorado River squawfish.

The black-footed ferret has not actually been seen in the Planning Unit (Hubbard et al., 1979), but numerous popular and technical checklists include San Juan County in the range of the ferret because its chief food, the prairie dog, is found in scattered areas within the county (Map 2-3).

Hubbard et al., (1979) state that migratory bald eagles have been sighted near Navajo Reservoir and along the San Juan River. Bald eagles are no longer known to nest in New Mexico; however, a nest was historically reported near the present Navajo Reservoir. Grubb (1979) observed a total of 668 individuals and 24 potential roost sites (14 of which showed eagle activity) in the Navajo Reservoir area during the winter of 1979. According to Grubb, their food was primarily carrion of big game species.

The peregrine falcon is known to be in San Juan County by a single verified sighting near Navajo Reservoir and four unverified sightings along the Animas and San Juan Rivers (Hubbard, et al., 1979). The food of this species consists of a variety of birds, including ducks, geese, swallows, and woodpeckers.

The Colorado River squawfish is known to exist in the Navajo Reservoir area from 6 verified specimens, and near the San Juan River below Navajo Dam from a single unverified report (Hubbard et al., 1979).

WILD HORSES

Wild horse use of the Planning Unit is limited to two adjacent herd areas involving approximately 22,000 acres in the extreme northeastern portion. (Refer to Map 2-4 for exact herd area locations, water availability, and fence locations in or near the area.) The wild horse herd existing on public land is believed to be an overflow from the adjacent Carson National Forest as a result of overpopulation. BLM-Forest Service total herd estimates in 1978 were: BLM - 35 head yearlong; Carson National Forest - 175 head yearlong; total 210 head. Of this total, an estimated 130 head died on the Carson National Forest during the winter of 1978-79, primarily because of severe climatic conditions and poor animal condition.

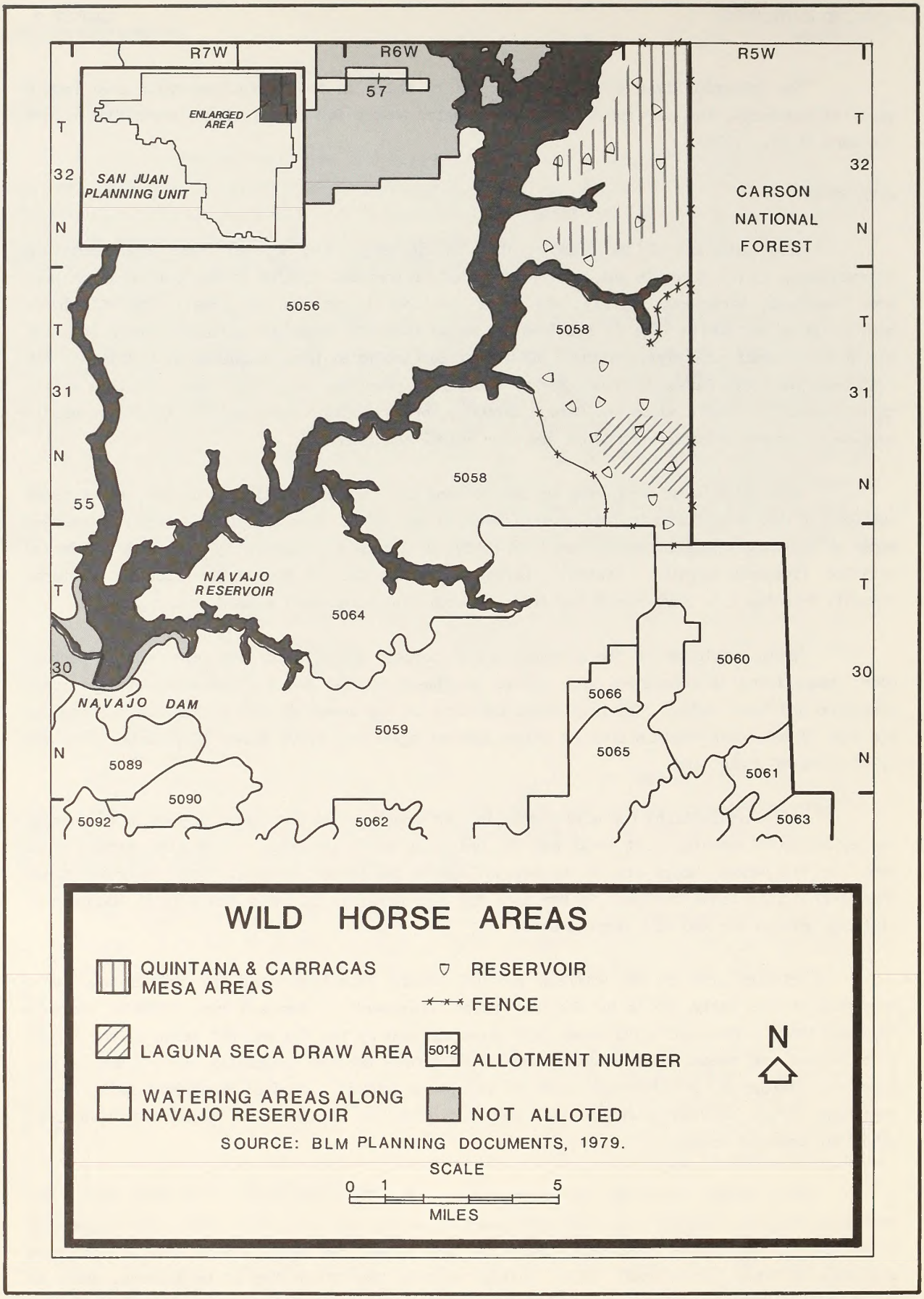
Both wild horse herd areas on public land are located totally within two out of three pastures of the Rosa Community Allotment (refer to Map 2-4). This allotment (#5058) is managed under an existing Allotment Management Plan (AMP), utilizing a 3 pasture (3-year cycle) deferred rotation livestock grazing system. Livestock occupy two of the three allotment pastures annually from May 1 to November 30 and thus use both wild horse herd areas 1 year out of 3.

Range condition of the allotment is 11 percent good, 70 percent fair, and 19 percent poor; range trend is considered up. (Refer to Appendices E-4 and E-5 for more detailed range condition and trend data.) The herd areas contain, 16,209 acres of public land administered by the BLM, 2,820 acres administered by other federal agencies, 1,691 acres of private land, and 1,280 acres of state land.

Water availability for wild horses in both areas is not considered a problem because of the existence of numerous dirt tanks and the proximity to Navajo Lake. A 1.5-mile pasture fence runs from the Bancos Canyon arm of the Navajo Lake to the Carson National Forest boundary fence (Map 2-4). This fence has been in the area for approximately 10 years and acts as boundary or division between the two wild horse areas.

Private lands in the southern portion (Laguna Seca Draw area) of the allotment were purchased in the early 1960's by the New Mexico Department of Game and Fish (NMDGF). Between 1964 and 1967, a total of 1,340 acres (693 acres managed by the BLM and 647 acres by the NMDGF) were treated and seeded to cool-season grass and browse species (primarily crested wheatgrass, pubescent wheatgrass, smooth brome, alfalfa, and sweet clover). Crested wheatgrass is the major remaining forage species found in the area and provides considerable forage for livestock, wildlife, and wild horses.

Wild horses occupying the northernmost area (Quintana Mesa - Carracas Mesa) are primarily yearlong residents and have been known to occupy the area since 1965. The larger band of horses in the Laguna Seca Draw area are more recent residents. There were no reported sightings of these horses until 1975. Initial reports identified them to be seasonal users of the public lands, use being confined primarily to the winter and spring season, after which the horses would return to the Carson National Forest. Present use of the public lands is yearlong, with seasonal fluctuations in horse numbers.


R7W
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57
ENLARGED AREA
SAN JUAN PLANNING UNIT
T 32 N
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CARSON NATIONAL FOREST
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NAVAJO RESERVOIR
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5089
5090
5092
5062
5063
NAVAJO DAM
WILD HORSE AREAS
QUINTANA & CARRACAS MESA AREAS
RESERVOIR
FENCE
LAGUNA SECA DRAW AREA
5012
ALLOTMENT NUMBER
N
WATERING AREAS ALONG NAVAJO RESERVOIR
NOT ALLOTED
SOURCE: BLM PLANNING DOCUMENTS, 1979.
SCALE
0 1 5
MILES

MAP 2-4

At the time of the passage of the Wild and Free-Roaming Horse and Burro Act (16 U.S.C. 1331) in 1971, an estimated total of 23 head occupied both areas.

The most significant problem affecting the horse herd is competition for forage with livestock, deer, and elk during the late winter-early spring periods. The horse use area is also a critical deer and elk winter range, with heaviest competition made on cool-season species in early spring (NMDGF seeded areas -- refer to BLM Files, Farmington Resource Area Office).

LIVESTOCK GRAZING

Operations

Presently there are 185 livestock operators on the 138 allotments within the San Juan Planning Unit (BLM Files, Farmington Resource Area Office). Existing allotment status is outlined in Table 2-3 below.

Period of Use

A majority of the grazing allotments within the Planning Unit are grazed seasonally. Of the 138 allotments, 46 are grazed yearlong, 29 receive summer use, and 63 receive fall-winter and/or spring use. Table 2-4 below gives more detailed period-of-use information.

Of the 138 public-land allotments within the Planning Unit, 85 are grazed in conjunction with state-leased lands. In several instances, allotments include both controlled and uncontrolled state land leases. (Uncontrolled leases are state lands within an allotment which are not leased by the allotment operator.) Lease renewal dates tend to vary considerably on allotments with more than one state lease.

The majority of winter- and/or spring-use ranch operators remove their livestock from the public land to summer pastures in Colorado, primarily on the San Juan National Forest. The summer-use ranchers use the public land in conjunction with their private irrigated land. Cattle graze the public land during the summer months while the private land is used to produce hay. At the end of the growing season, the cattle are removed from the public land to graze the stubble and hay on private land during the winter months.

Class of Livestock and Type of Operation

Cattle, sheep, goats, and horses are currently authorized (permitted) in the Planning Unit (refer to Appendix H-1 for class of livestock authorized by allotment). Major breeds of cattle include Hereford, Angus, Brangus, Charolais Shorthorn, and various crosses of these breeds; bulls used are generally not crossbreeds. Less than one percent of the total herds are registered. Horse use is primarily for range-related activities on allotments.

Cow-calf operations are predominant in the Planning Unit. Breeding programs are generally seasonal; calves are born in the spring (March through April) and are shipped (sold) in the fall (October through November). The average calf-crop percentage for the area is estimated to be 77 percent; average death losses are estimated to be 3 percent for calves and 6 percent overall. Weaning weights are estimated to be 415 pounds for steers and 392 pounds for heifers.

TABLE 2-3

EXISTING ALLOTMENT MANAGEMENT STATUS

Allotment Status	No. of Allotments	Ranchers Involved	Total Acres	Percent of Planning Unit
AMP	11	11	223,381	17
AMP-Comm. Allot.	4	11	101,762	8
Non-AMP	104	104	760,119	60
Non-AMP Comm. Allot.	18	106	192,397	15
Non-AMP (unallotted)	1	0	962	<1
Totals	138	—[a]	1,278,621	100

Source: BLM Planning Documents, 1979.

Note: [a] This is not a cumulative total; several ranchers graze more than one allotment. Refer to Appendix H-2 for more detailed allotment status data.

TABLE 2-4

PERIOD OF USE ON PUBLIC LAND ALLOTMENTS

Period of Use	No. of Allotments	Public Land Acres	Percentage of Planning Unit
Yearlong	46	373,461	40
Spring-Summer	29	127,349	14
Winter-Spring	60	413,512	45
Fall Only	1	2,538	Less than .5
Winter Only	2	10,049	1

Source: BLM Planning Documents, 1979.

The class of livestock and type of livestock operations in the Planning Unit have remained relatively unchanged over the past ten years and are expected to continue. Allotment transfers and sales to realtors have increased during the past ten years and are expected to increase in the future; the allotments involved were purchased primarily for the possible subdivision of private lands within them and not for livestock utilization.

Based on existing URA and MFP data, approximately 14 percent of the Planning Unit (179,007 acres) is considered unsuitable for livestock use (11 percent is classified as steep and rocky, and 3 percent is barren or supports less than 2 percent vegetation). The remaining 86 percent of the area (1,099,614 acres) is considered suitable for livestock use.

Major problems affecting livestock production and management in the Planning Unit are ranked in order of importance as follows: (1) Unrehabilitated well-pad and right-of-way areas; (2) Large numbers of roads; (3) Lack of dependable water; (4) Livestock distribution; (5) Unsuitable range; (6) Unauthorized structures; (7) Poor allotment boundary fences; (8) Lack of adequate forage; (9) Off-road vehicle use; (10) Unauthorized (trespass) livestock; (11) Vandalism; (12) Lack of cool-season forage species; (13) Non-functional base properties; (14) Excessive numbers of rodents; and (15) Poisonous plants.

FORESTRY

Timbered Lands

The Planning Unit contains a minimal amount of timbered lands of which only a very small portion can be considered productive. For the most part, these timbered lands are scattered and located in canyon bottoms and on north slopes at elevations of 6,500 to 7,500 feet.

The total acreage of the Planning Unit in timber is 3,025; the standing volume is estimated to be about 4.4 million board feet (refer to Appendix I-1). The timber is broken down into two categories: commercial productive and commercial non-productive. Ponderosa pine (Pinus ponderosa) and Douglas fir (Pseudotsuga menziesii) are referred to as commerical types; they are capable of being used primarily as sawtimber.

Ponderosa pine is the predominant species. The stands have been encroached by pinyon-juniper, which now comprises an understory, especially in association with ponderosa pine. In general, the growth rate and site quality for most of these timbered stands are quite low.

Woodlands

Woodlands comprise the major portion of the forested lands within the Planning Unit and are composed of three primary species: pinyon pine (Pinus edulis), Rocky Mountain juniper (Juniperus scopulorum), and one-seeded juniper (Juniperus monosperma). This woodland type covers an estimated 500,000 acres. No formal inventory of this resource has been made, therefore, no precise figures can be presented as to acres and volume.

The woodland type begins at an elevation of about 5,500 feet with the presence of a few juniper. At an elevation of approximately 6,000 to 6,200 feet, the juniper begins to grow side by side with the pinyon pine. As elevation increases, juniper numbers decrease and pinyon

pine increases. The pinyon-juniper type can be found growing in almost all locations above 5,500 feet except in the grassy pasture bottoms.

The woodland type is broken down into two categories: commercial and non-commercial. Figures for both the woodland and the timber categories are listed in Appendix I-2. The estimated standing volume on the 226,577 acres of commercial stands is 1,332,800 cords. The sustained yield annual cut is 6,664 cords, based on an average stocking level of 5 cords per acre and a 200 year rotation. It is believed that the sustained yield capability of the Planning Unit is now being exceeded.

RECREATION

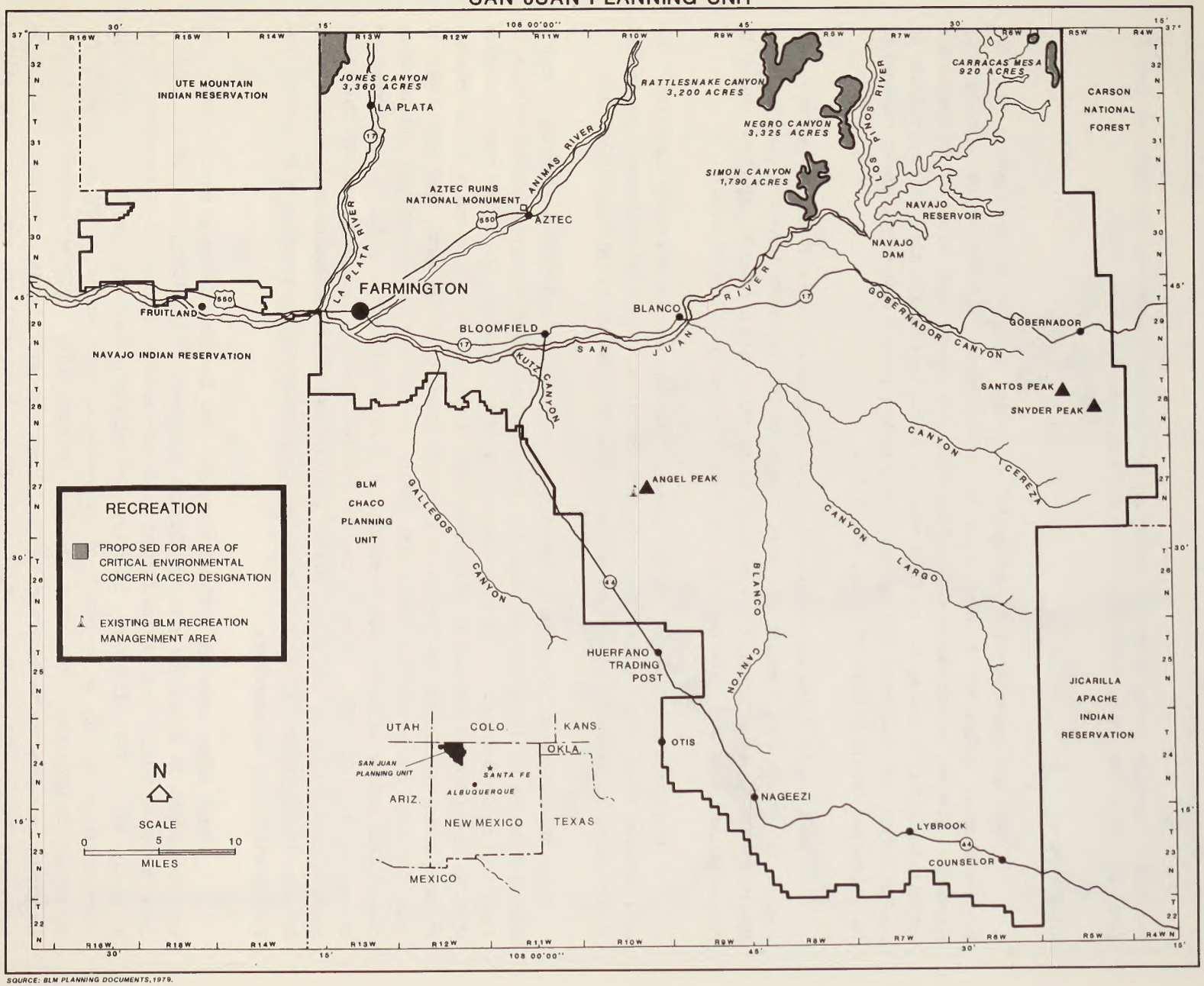
The Planning Unit contains 946,844 acres of public land administered by the BLM. Of this total, 275 acres are within the only BLM-developed recreation management area, Angel Peak (see Map 2-5). The remaining public land is available for a wide variety of dispersed recreation opportunities. Individual recreation activities (as identified in BLM planning documents) are listed in Appendix J with the present and future estimated demand by visitor-days. Total demand for all activities was 603,001 visitor-days in 1978; this demand is increasing as a result of regional population growth.

Most of the recreational use on public land in the Planning Unit occurs during spring, summer, and fall. The heaviest use season for almost all activities and areas is June through September; May and October are heavy use periods if weather conditions are suitable.

Horseback riding, hunting, ORV use, picnicking, and sightseeing are the primary activities during the heavy use season, accounting for 390,941 visitor-days. Hunting use naturally occurs during the period of the state-regulated hunting seasons, which extend into the fall and winter recreation seasons. Big game and upland game hunting use accounts for 58,198 visitor-days. Fishing use accounts for 2,191 visitor-days; only 4 miles of public land streambank are located within good fishing waters. No lake fishing occurs on public land. Heavy use areas for horseback riding (142,690 visitor-days) and ORV use (62,824 visitor-days) have chiefly been located near population centers. Picnicking use (61,420 visitor-days) has generally been concentrated around water or the Angel Peak recreation area. Persons using the many numerous travel routes to view scenic attractions (rivers and lakes, geologic features, and cultural resources) contribute to the 65,809 visitor-days of sightseeing use on public land in the Planning Unit. The remaining 212,060 visitor-days in the Planning Unit are divided among the other recreation activities listed in Appendix J.

Five areas totaling 12,595 acres within the Planning Unit have been proposed to be studied for designation as Areas of Critical Environmental Concern (ACECs -- see Map 2-5). The reasons that these areas were selected for possible designation as ACECs are because they contain significant resource values worthy of protection while they also contain values important for resource development. The five areas and the values they contain are: (1) the Jones Canyon area contains primitive area values and possible wilderness characteristics; (2) Rattlesnake Canyon possesses quality wildlife and botanical habitat; (3) Negro Canyon contains wildlife and botanical sightseeing opportunities; (4) Carracas Mesa may have potential for special consideration because of wildlife and recreation use values; and (5) Simon Canyon has botanical sightseeing opportunities, riparian habitat, and cultural resource values. An ACEC Plan Element

SAN JUAN PLANNING UNIT



SOURCE: BLM PLANNING DOCUMENTS, 1979.

MAP 2-5

for Simon Canyon is being developed (according to the draft Guidelines for ACECs of June 6, 1979) to protect the values identified in the BLM's Management Framework Plan.

WILDERNESS

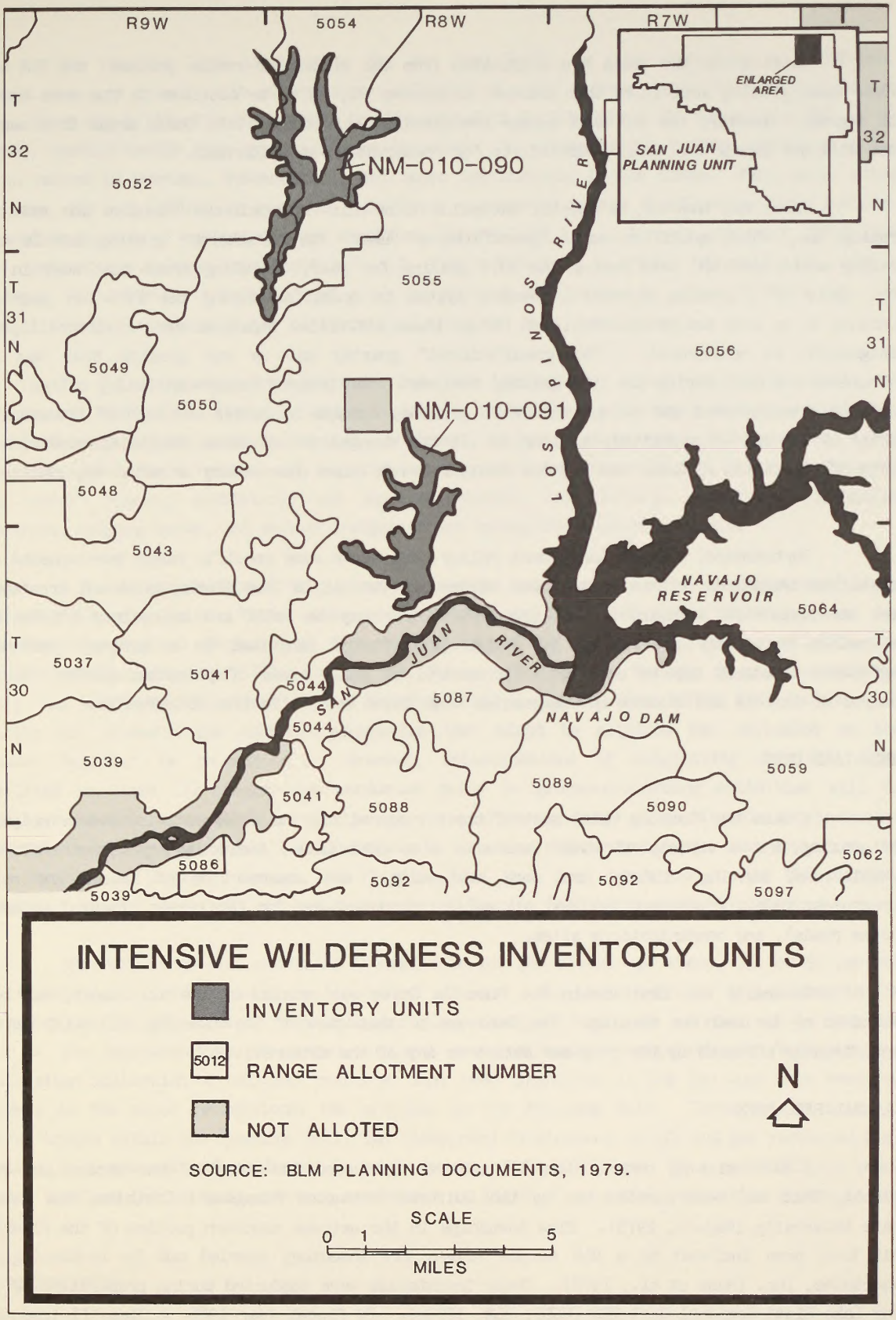
There are currently no BLM-designated wilderness areas within the Planning Unit, nor are there areas designated or under study by other agencies adjacent to the Planning Unit boundaries. However, in accordance with Section 603 of the Federal Land Policy and Management Act (FLPMA), the BLM is reviewing all roadless areas on public land to determine their suitability or non-suitability for wilderness designation. The inventory process follows procedures outlined in the Wilderness Inventory Handbook (USDI, BLM, 1978).

As a result of the wilderness review process, inventory units NM-010-090 and NM-010-091 located in the San Juan Planning Unit were identified for intensive inventory (see Map 2-6). NM-010-090 (Rattlesnake Canyon) contains steep canyon walls with a rocky valley floor covered in pinyon-juniper, scattered ponderosa pine, and sage. The area is 381 acres in size.

NM-010-091 (Simon Canyon) is 273 acres in size and remains relatively unspoiled. The area contains steep canyon walls and a variety of vegetation. Grass and cottonwoods are located in the canyon bottoms, with pinyon-juniper and pockets of ponderosa in the higher elevations.

The purpose of the intensive inventory is to obtain the information necessary to make a determination as to whether or not these two inventory units have wilderness characteristics as identified in Section 2 (c) of the Wilderness Act of 1964. Lands with wilderness characteristics will be identified by the BLM as Wilderness Study Areas (WSAs). As a result of information gathered during the Albuquerque District's intensive inventory of the units, they were judged to lack wilderness characteristics (USDI, BLM, 1980). It has been recommended that both units be dropped from further wilderness consideration. A 90-day public review period is in progress and it ends on June, 30, 1980. Based on the BLM District Manager's recommendations and the public comments received during the 90-day comment period, the BLM State Director will make a final decision (by September 30, 1980) as to whether these units will become WSAs or be dropped from further wilderness consideration.

Until these lands are officially dropped from further wilderness consideration, they will be managed in accordance with the Interim Management Policy (USDI, BLM, 1979b). Public lands may be officially dropped from further wilderness consideration in one of two ways: (1) as a result of a BLM wilderness inventory determination that the lands lack wilderness characteristics, or (2) as a result of Congressional rejection of a WSA as suitable for wilderness designation. This means that one or both units could be dropped from further wilderness consideration in September, 1980 as a result of the intensive inventory. The Interim Management Policy will remain in effect on these two units until the end of a 30-day waiting period that begins upon publication of the State Director's decision in the Federal Register. At that time, the limitations imposed on grazing uses on those lands under wilderness review would no longer apply. However, if one or both inventory units is identified as a WSA, only Congress can release the area from further wilderness consideration and the restrictions of the Interim Management Policy.


R9W
5054
R8W
R7W
ENLARGED AREA
SAN JUAN PLANNING UNIT
T 32 N
T 31 N
T 30 N
NM-010-090
NM-010-091
LOS PINOS RIVER
SAN JUAN RIVER
NAVAJO RESERVOIR
NAVAJO DAM
5052
5055
5056
5049
5050
5048
5043
5064
5037
5041
5044
5087
5039
5088
5089
5090
5059
5086
5092
5097
5062
INTENSIVE WILDERNESS INVENTORY UNITS
INVENTORY UNITS
5012 RANGE ALLOTMENT NUMBER
NOT ALLOTED
N
SOURCE: BLM PLANNING DOCUMENTS, 1979.
SCALE
0 1 5
MILES

MAP 2-6

Until these two areas are eliminated from the wilderness review process, the BLM will allow those grazing activities that existed on October 21, 1976, to continue in the same manner and degree. However, the BLM must manage new grazing activities within these areas in a manner that will not impair the areas' suitability for preservation as wilderness.

There is, however, a special exception from this nonimpairment standard for existing grazing use, which qualifies as a "grandfathered" use. "Grandfathered" grazing use is that grazing authorized and used during the 1976 grazing fee year, including areas that were in the rest cycle of a grazing system. A grazing system in operation during the 1976 fee year may continue to be used and maintained, even though these activities impair an area's suitability for designation as wilderness. "Non-grandfathered" grazing use is any grazing that was not authorized and used during the 1976 grazing fee year. The Interim Management Policy states: "In both the grandfathered and non-grandfathered grazing, changes in number and kind of livestock or period of use may be permitted, so long as (1) the changes do not cause declining condition or trend of vegetation or soil, and (2) the changes do not cause unnecessary or undue degradation of the lands."

Furthermore, Interim Management Policy does allow some specific range developments and vegetation treatments within areas under wilderness review, if the developments and treatments meet non-impairment standards. New permanent fences may be built and maintained if the BLM determines that they are needed to better protect the rangeland in a natural condition. Vegetation treatment may be used only for control of small areas of poisonous plants, or for control of insects and disease in emergencies when there is no effective alternative.

OTHER LAND USES

Within the Planning Unit, most of the acreage within the allotments is used principally for grazing, but a variety of other land uses also take place, including recreation (off-road vehicle use, hunting, hiking, and rock collecting), and construction of houses and other structures, pads for numerous gas and oil wells, rights-of-way for facilities, roads (including access roads), and communications sites.

Generally the land within the Planning Unit, but outside of the allotments, has been urbanized or is used for farming. The land use of that part of the Planning Unit will not be significantly affected by the Proposed Action or any of the alternatives.

CULTURAL RESOURCES

A BLM existing data (Class I) cultural resources inventory of the entire San Juan Planning Unit has been carried out by the Cultural Resources Management Division, New Mexico State University (Magers, 1979). Five townships in the extreme southern portion of the Planning Unit have been included in a BLM sample (Class II) inventory carried out by Archaeological Associates, Inc. (Huse et al., 1978). These inventories were conducted during preparation of the Star Lake-Bisti Regional Coal FES (USDI, BLM, 1979e). By fiscal year 1985, a Class II inventory of representative areas of the entire Planning Unit will be carried out to provide additional cultural resource data for land use planning. These inventories are being conducted in accordance with the nationwide Programmatic Memorandum of Agreement between the BLM and the Advisory Council on Historic Preservation, dated January 14, 1980.

The Planning Unit lies within the San Juan Basin, an area containing a 10,000-year cultural resource record, with site density estimated to range between 2 and 90 sites per square mile. There are 1,144 site records for the Planning Unit in BLM files. Of these only 746, or 65 percent, contain usable data for management purposes. An estimated 200 to 300 additional sites are on record in museums, universities, and other institutions in the state. Many other sites are known, but not officially recorded. Cultures represented within the Planning Unit include: Paleoindian hunters of extinct ice age megafauna (10,000-5000 B.C.); Archaic gatherers (5000-1000 B.C.); Anasazi agriculturalists (1000 B.C.-A.D. 1300); Navajo (A.D. 1500); Hispanic (A.D. 1600); and Anglo (A.D. 1865). A breakdown of sites by cultural affiliation is given in Table 2-5. As shown in this table, the majority of identified sites are Navajo or Anasazi.

The following range of site types has been identified: lithic projectile points and other tools; habitation sites, including campsites, pithouses, multi-story masonry structures, and forked-stick hogans; various special use areas, including sherd and lithic scatters, food processing sites, field houses, and isolated water control devices; rock art, kivas, shrines and other sacred places; prehistoric and historic trails; and historic structures, including homesteads, trading posts, and modern irrigation and energy development projects.

A formal recognition of significance has been made for some sites on BLM-managed lands within the Planning Unit. These sites are identified in Table 2-6. Two of these sites are listed on the National Register of Historic Places and 62 sites are listed as eligible for inclusion (Federal Register, Vol. 44, No. 26, February 6, 1979). Because of the size of the public land area (946,844 acres) in the Planning Unit, a comprehensive (Class III) inventory to identify all historic and cultural properties that might be eligible for inclusion on the National Register is impractical. However, determinations of eligibility for all sites identified in Class III inventories conducted prior to ground-disturbing activities will be formally requested by the BLM. In addition to those sites currently on or eligible for inclusion on the National Register, Table 2-6 also shows 11 sites on BLM-managed lands that appear on the State Register of Historic Places, and 13 sites that have been identified in the BLM planning system as potential Areas of Critical Environmental Concern (ACEC) for cultural resources.

Information on site condition is available for 356 sites. Of these, 331 or 93 percent have moderate to severe erosion or man-caused effects. Man-caused effects include vegetation treatments on 127,980 acres of sagebrush and pinyon-juniper that were carried out by the BLM prior to the implementation of current cultural resource inventory regulations. Vandalism and unauthorized collection of cultural resources have been identified in the San Juan Unit Resource Analysis as the major recreational use problems in the Planning Unit. There are no areas of limited access within the Planning Unit; the widespread development of oil and gas resources has resulted in a road network estimated to be in excess of 10,000 miles. This accessibility poses special problems for cultural resource management in light of potential population growth in the Basin.

VISUAL RESOURCES

The visual resources of the Planning Unit are tentatively classified in an analysis done by the BLM for the Star Lake-Bisti Regional Coal FES (USDI, BLM, 1979d). The Visual Resource Management (VRM) classification assigned to a given land area depends on three factors: the inherent quality of the scenery; the visual sensitivity, which expresses the volume of

TABLE 2-5

CULTURAL RESOURCES IN THE SAN JUAN PLANNING UNIT[a/]

Cultural Affiliation	Number of Sites	Percent of Total
Paleoindian/Archaic	37	4.9
Anasazi		
Basketmaker II - Pueblo I	273	36.6
Pueblo II - III	56	7.5
Indeterminate	32	4.3
Navajo	252	33.8
Anglo/Hispanic	25	3.4
Indeterminate	71	9.5
Multicomponent	85	11.4

Source: BLM, San Juan Planning Unit URA, 1978-79.

Note: [a/]This summary is based on 746 sites (65 percent of the 1,144 sites in the Plannning Unit that have been recorded in BLM files). Available data on the remaining sites are inadequate for this summary. Of the 746 sites for which information was obtained, 659 are on BLM-managed lands within the Planning Unit.

TABLE 2-6

CULTURAL RESOURCES OF RECOGNIZED SIGNIFICANCE IN THE SAN JUAN PLANNING UNIT
MANAGED OR PROPOSED FOR COOPERATIVE MANAGEMENT BY THE BLM

Site Name and Number	Cultural Affiliation	Land Status	Reg. Of Historic Places		Agency Performing Site Stabilization	BLM Criterion for Selection as Potential ACEC[a]
			National	State		
Basketmaker III - Pueblo I Village (NM-01-2008X)	Basket-maker/ Pueblo	State[b]	No	No	None	--
Christmas Tree Ruin (NM-01-2001)	Navajo	BLM	Eligible	Yes	BLM	Cultural Conservation
Citadel (NM-01-047X)	Navajo	State[c]	No	No	None[d]	--[e]
Crow Canyon Arch. District (CP 276)	Pueblo/ Navajo	BLM	Yes	Yes	--	Cultural Conservation
Crow Canyon Ruin (NM-01-2002)	Navajo	BLM	--	--	BLM	--
Shaft Ruin (NM-01-015)	Navajo	BLM	--	--	NPS	--
Frances Canyon Ruin (NM-01-189)	Navajo	BLM	Yes	Yes	BLM	Scientific Values
Hooded Fireplace Ruin (NM-01-012)	Navajo	BLM	Eligible	Yes	BLM	Scientific Values
Largo School Ruin (NM-01-2000)	Navajo	BLM	Eligible	Yes	BLM	Cultural Conservation

TABLE 2-6 (Cont'd)

Site Name and Number	Cultural Affiliation	Land Status	Reg. Of Historic Places		Agency Performing Site Stabilization	BLM Criterion for Selection as Potential ACEC[a/]
			National	State		
Multiple Resource Area in Bolack Land Exchange						
(ENM 10832, -53, -56-58, -65-66, -69-70)	Probable Archaic	BLM[f/]	Eligible	No	None	No
(ENM 10871)	Probable Archaic/ Pueblo	BLM[f/]	Eligible	No	None	No
(ENM 10855)	Probable Archaic/ Navajo	BLM[f/]	Eligible	No	None	No
(ENM 10809, -12, -33, -42, -49-50, -68; NM-01-3662, -64-65)	Pueblo	BLM[f/]	Eligible	No	None	No
(ENM 10808)	Pueblo/ Possible Archaic	BLM[f/]	Eligible	No	None	No
(ENM 10816, -24-28, -30-31, -37, -43, -45-46, -48, -51, -62-64)	Navajo	BLM[f/]	Eligible	No	None	No

TABLE 2-6 (Cont'd)

Site Name and Number	Cultural Affiliation	Land Status	Reg. Of Historic Places		Agency Performing Site Stabilization	BLM Criterion for Selection as Potential ACEC[a/]
			National	State		
(ENM 10822-23)	Probable Navajo	BLM[f/]	Eligible	No	None	No
(ENM 10838)	Navajo/ Lithic	BLM[f/]	Eligible	No	None	No
(ENM 10817, -34)	Navajo/ Indeter-minate	BLM[f/]	Eligible	No	None	No
(ENM 10818 -19, -41, -47, -59, -61; NM-01-3657-58)	Unknown or Indeter-minate	BLM[f/]	Eligible	No	None	No
(ENM 10821)	Indeter-minate/ Possible Pueblo	BLM[f/]	Eligible	No	None	No
Navajo Cultural Area 1 (None)	Navajo	BLM	No	No	--	Religious Purposes
Navajo Cultural Area 2 (None)	Navajo	BLM	No	No	--	Religious Purposes
Navajo Cultural Area 3 (None)	Navajo	BLM	No	No	--	Religious Purposes

TABLE 2-6 (Cont'd)

Site Name and Number	Cultural Affiliation	Land Status	Reg. Of Historic Places		Agency Performing Site Stabilization	BLM Criterion for Selection as Potential ACEC[a/]
			National	State		
Navajo Cultural Area 4 (None)	Navajo	BLM	No	No	--	Religious Purposes
Old Fort Ruin (LA 1869)	Navajo	State[c/]	Eligible	Yes	None[d/]	--[h/]
Simon Canyon Ruin (NM-01-1167)	Navajo	BLM	Eligible	Yes	BLM	Cultural Conservation
Split Rock Ruin (NM-01-005)	Navajo	BLM	Eligible	Yes	BLM	Cultural Conservation
Tapicito Ruin (NM-01-004)	Navajo	BLM	Eligible	Yes	BLM	Cultural Conservation
Three Corn Ruin (LA 1871)	Navajo	State[c/]	Eligible	Yes	None[d/]	--[h/]
Twin Angels Site (NM-01-040)	Pueblo	BLM	Eligible	Yes	None	Scientific Values

Sources: BLM San Juan Planning Unit URA and MFP, 1978-79, with updated information from the New Mexico State Historic Preservation Officer and the National Register of Historic Places.

TABLE 2-6 (Concluded)

Notes: a/ Area of Critical Environmental Concern.

b/ The New Mexico State Director, BLM, has accepted a San Juan Management Framework Plan (MFP) recommendation to initiate a coordinated management agreement between the BLM, the State Historic Preservation Officer, and the New Mexico Department of Game and Fish for the protection and management of this site.

c/ The New Mexico State Director, BLM has accepted a San Juan MFP recommendation to examine the feasibility of developing a cooperative protection plan for this site with the State of New Mexico or of acquiring this site from the state by exchange.

d/ This site would be stabilized if acquired by the BLM.

e/ This site meets the criterion for cultural conservation.

f/ There is a pending proposal to exchange these BLM-managed lands for private lands owned by Mr. Tom Bolack.

g/ The effect of the American Indian Religious Freedom Act of 1978 on this potential ACEC is yet undetermined.

h/ This site could be incorporated with a potential ACEC.

viewers and their attitudes toward changes in the scenery; and the distance zones from which the scenery is viewed.

These three factors are then rated or measured. The combined effect (as shown in Appendix K) determines which one of the five VRM classes is assigned to a specific area. These classes are designed to indicate the degree of modification allowed in the basic elements of the landscape (see Table 2-7).

Distribution of the VRM classes in the Planning Unit is shown on Map 2-7. About 62 percent of the Planning Unit (886,569 acres) is tentatively classified as Class IV; 33 percent (471,884 acres) is tentatively classified as Class III; and the remaining 5 percent (71,498 acres) is covered by a tentative Class II designation.

SOCIAL AND ECONOMIC CONDITIONS

The Proposed Action or alternative(s) would directly affect 185 ranchers who presently hold grazing permits or share community allotments in the Planning Unit. In addition, approximately 75 ranchers who make use of public lands in the Planning Unit but whose names are not specifically included in permits would be affected; these operators are Navajo Indians in the Counselor and Nageezi areas who either use allotments held in the name of the Navajo Tribe or sell livestock to trading post owners who have allotments (Harbridge House, 1980). These programs would also indirectly affect other residents of the communities in this area, as changing levels of ranch production may cause changes in employment, income, and quality of life.

This socioeconomic analysis examines a special study area that includes San Juan and Rio Arriba Counties, New Mexico, and La Plata County, Colorado. An estimated 66.5 percent of ranchers grazing cattle, horses, sheep and other livestock in the Planning Unit live in San Juan County, including some who reside in areas south and west of the Planning Unit's boundaries. Approximately 20.7 percent of the ranchers are residents of western Rio Arriba County, including a few in parts of the county east of the Planning Unit. Another 5.9 percent live in southwestern Colorado, chiefly in La Plata County.

The three-county area forms a distinct geographical and socioeconomic unit containing most of the upper basin of the San Juan River. The physical distances which separate this region from the principal population centers in New Mexico and Colorado, together with the mountain topography, have helped to create what has been labeled a "natural community" centered upon Farmington, New Mexico, the area's largest city and most important marketplace (Eastman and Romanek, 1975).

Livestock ranching has been a basic economic activity here for more than a century and has played an integral role in the social development of the area. Within the ranching sector, relationships between the parts of the region on either side of the Colorado-New Mexico state line are strong. In other sectors of the regional economy, and in the lifestyles of local inhabitants, similar ties exist.

Basic data for this analysis was obtained from the files of the BLM Farmington Resource Area Office. This included information on authorized and actual grazing levels, and names and

TABLE 2-7

VISUAL RESOURCE MANAGEMENT OBJECTIVES BY CLASS

Class I. This class provides primarily for natural ecological changes; however, it does not preclude very limited management activity. Any contrast created within the characteristic environment must not attract attention. This class is applied to wilderness areas, some natural areas, wild portions of the wild and scenic rivers, and other similar situations where management activities are to be restricted.

Class II. Changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the characteristic landscape. A contrast may be seen but should not attract attention.

Class III. Contrasts to the basic elements caused by a management activity may be evident and begin to attract attention in the characteristic landscape. However, the changes should remain subordinate to the existing characteristic landscape.

Class IV. Contrasts may attract attention and be a dominant feature of the landscape in terms of scale; however, the change should repeat the basic elements inherent in the characteristic landscape.

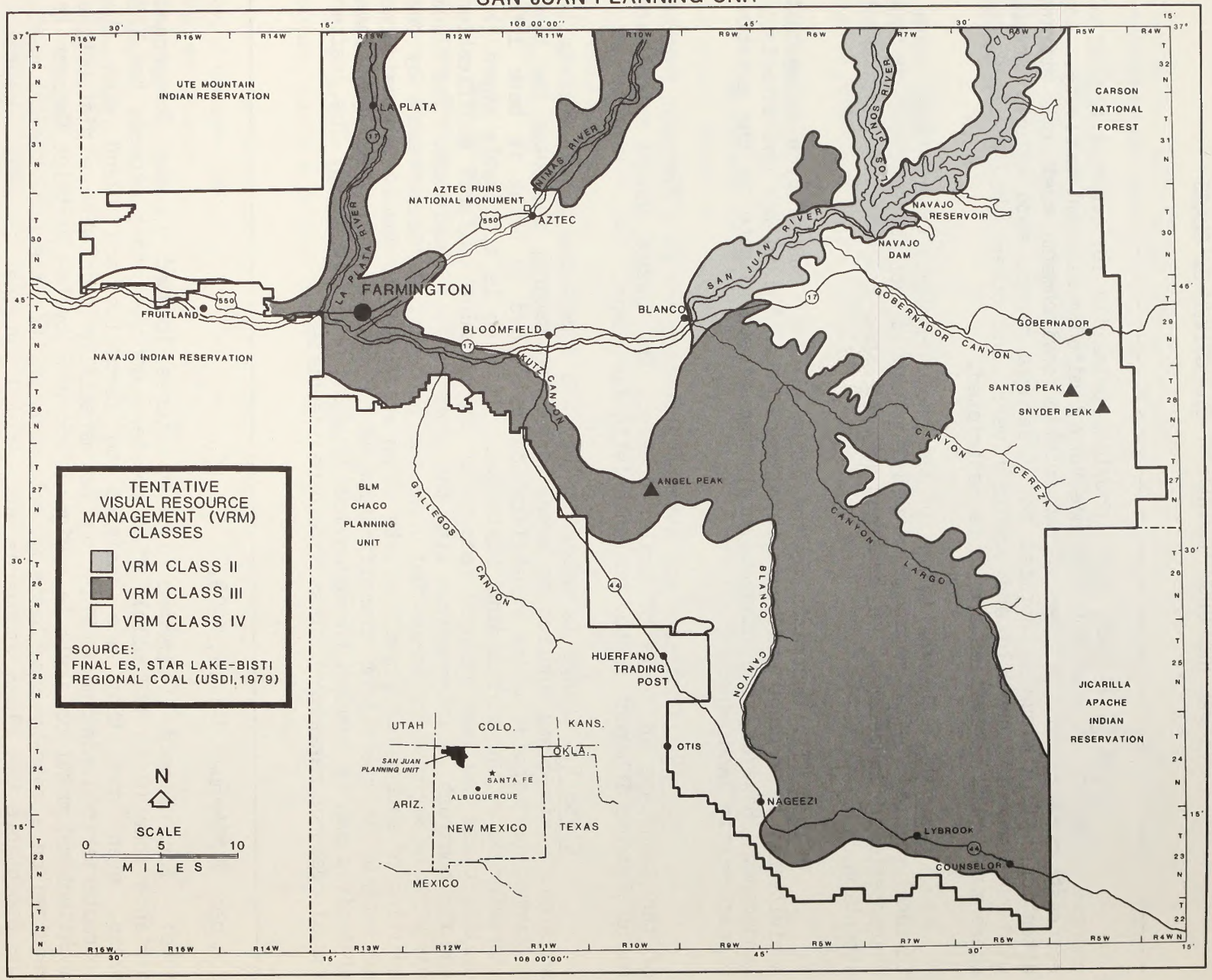
Class V. Change is needed or may add acceptable visual variety to an area. This class applies to areas where the natural character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding landscape. It also is applicable where the quality class has been reduced because of unacceptable cultural modification and the contrast is inharmonious with the characteristic landscape. The class may also be applied to areas that have the potential for enhancement by the addition of acceptable visual variety to an area/site. It should be considered an interim or short-term classification until one of the other VRM class objectives can be reached through rehabilitation or enhancement. The desired visual resource management class should be identified.

Source: BLM Manual 8411.6, 1978.

Note: For Classes II through IV, structures located in the foreground distance zone (0 to 1/2 mile) often create a contrast that exceeds the VRM class, even when they are designed to harmonize and blend with the characteristic landscape. This may be especially true when a distinctive architectural motif or style is designed. Approval by the District Manager is required on a case-by-case basis to determine whether the structure(s) meets the acceptable VRM class standards and, if not, whether it adds acceptable visual variety to the landscape.

MAP 2-7

SAN JUAN PLANNING UNIT



addresses of ranchers. Additional data was collected by Harbridge House in conversations with 42 ranchers during November, 1979. These interviews provided basic information on ranch operation, costs and returns, and characteristics of the ranching population. Secondary data for the three-county area was obtained from state and county governments, the Navajo Tribe, and other sources.

Demographics of the Socioeconomic Study Region

According to 1978 figures, an estimated 128,400 persons live in La Plata, Rio Arriba, and San Juan Counties. As shown in Table 2-8, approximately 58 percent of the residents of the three counties inhabit San Juan County, about 22 percent live in Rio Arriba County, and the remaining 20 percent live in La Plata County. The populations of all three counties have been growing since 1950, with San Juan County recording the largest increase (more than 56,500 persons) over the 28-year period. Most of this growth has been concentrated in the vicinity of Farmington and the nearby communities of Aztec, Bloomfield, and Kirtland. Farmington is estimated to have a population of 30,910 (1978 figures), while the other three communities have a total 7,790 residents. An estimated 4,000 people live in nearby unincorporated areas like Flora Vista and Fruitland. The only other major population center in the region is Durango, in La Plata County, Colorado, with approximately 12,600 residents in 1978.

Outside of the few principal cities and towns and the adjacent areas, the San Juan Basin is sparsely populated. The three-county area has an average of 9.7 persons per square mile, and, in the rural, unincorporated areas, the population density is 4.6 persons per square mile. (The national average exceeds 60.) Rural settlements and crossroads communities are located throughout the area, but none has a population greater than 300. Some are long-established around post offices, schools, and trading posts. Others have recently developed along pipelines and highways. While the population of a few of these communities has grown since 1970 both as a result of natural increase and of activity in the oil and gas industry, population densities generally remain low and have changed little in several decades. This trend reflects the physical constraints placed on further development by the arid conditions which characterize the San Juan Basin.

The three-county area is populated by three distinct cultural groups, as shown in Table 2-9. In the division of its population between Anglos, Hispanos and Indians, the region resembles other parts of the American Southwest (Meinig, 1971). Indian tribes were the first group to settle in the San Juan Basin. The Navajo moved into the area more than four centuries ago, and many maintain traditional, pastoral lifestyles both on the reservation and in the adjacent, so-called "Checkerboard" tribal lands (Beck, 1962). Other, less populous Indian groups in the area include members of the Jicarilla Apache and the Southern Ute Mountain tribes, whose ancestors were in the area as early as the 15th century. Hispanic colonists from the Rio Grande Valley reached the San Juan Basin in the mid-nineteenth century. (Pioneer Association of San Juan County, New Mexico, 1976; Widdison, 1959). Anglo farmers, also arrived in the area during the 1850's, establishing Farmington and other settlements. Subsequent mining activity in the San Juan Mountains encouraged further Anglo in-migration and the growth of Durango and nearby towns. This trend has continued in recent years with development of oil and gas fields, and coal and uranium mines (Koogler and Whitney, 1972; MacDonald and Arrington, 1970). Attitudes and values of these more recent migrants to the area have added diversity to the social environment.

TABLE 2-8

TOTAL POPULATION, THREE-COUNTY AREA, 1950-1978

County	1950[a/]	1960[b/]	1970[c]	1980[d/]
La Plata	14,880	19,225	19,199	25,400
Rio Arriba	24,997	24,193	25,170	28,200
San Juan	18,292	53,306	52,517	74,800
Totals	58,169	96,724	96,886	128,400

Sources: a/ U.S. Department of Commerce, Bureau of the Census, 1952.

b/ U.S. Department of Commerce, Bureau of the Census, 1973.

c/ Provisional estimates for La Plata County supplied by the Job Service of Colorado, Division of Employment and Training, 1979.

d/ Provisional estimates for San Juan and Rio Arriba Counties supplied by the University of New Mexico, Bureau of Busines and Economic Research, 1979.

TABLE 2-9

TOTAL POPULATION BY RACIAL OR ETHNIC BACKGROUND, THREE-COUNTY AREA, 1978

County	Anglo	Hispanic	Indian	Other	Totals
La Plata	18,805	4,950	1,560	85	25,400
Rio Arriba	3,785	19,965	4,370	85	28,200
San Juan	41,960	5,160	27,000	680	74,800
Totals	64,545	30,075	32,930	850	128,400

Source: Estimates in Harbridge House, 1980, based on definitions of groups using primary language spoken as the point of differentiation.

Characteristics of the Ranching Population

The households of ranchers who use the allotments in the San Juan Planning Unit have an estimated 1,070 total members. This figure includes non-Indian ranchers, their immediate familes and employees, and 90 Navajo families (with a total of 516 members) who use Indian allotments. It represents the upper limit on the number of persons who might be directly affected by the Proposed Action and the alternatives. Only an estimated 18.5 percent of these ranchers depend on ranching for more than 50 percent of household income, and most ranch employees work on a part-time or seasonal basis (Harbridge House, 1980). Of the total ranching population, approximately 1,000 persons live in the three-county area. The majority of this population, 710 persons, is estimated to live in San Juan County, with another 225 in Rio Arriba County and 65 in La Plata County. In the three-county area, the ranching families potentially affected by the Proposed Action or alternatives represents 0.8 percent of the total population. (Table 2-10 supplies population figures for the three-county area.)

An increasing number of ranchers live in urban areas in the region, and commute to and from their ranches and allotted rangelands. Many ranchers perceive that their numbers are steadily diminishing, partly because of the effects of what they believe to be a recent drought, partly because of new requirements they see as being imposed by the federal government, and partly because of pressures they feel from rising costs and competition with other ranching areas. These perceptions do not consider other reasons for a decline in the numbers of ranchers, such as sale of ranch land for profit or choice of another occupation or lifestyle. The viewpoint of most ranchers is that largely because of forces beyond their control, a few ranchers have abandoned ranching and many more have cut back their herd sizes and taken jobs off the ranch.

Approximately one-fourth of the 42 ranchers contacted believe that the ranching population has diminished because of the weakening ranch economy, and that as a result they are becoming dependent on sources of employment and income in urban areas and industrial sectors. Household sizes among the ranching population are still nearly one and a half times the national average of 2.9, but most young adults from ranch families seek off-ranch jobs, and many leave the region entirely. Ranch operators average around 55 years of age (although, among Indian ranchers the average age is approximately 10 to 15 years lower). The older ranchers often see little likelihood that their ranches will survive another generation. Many ranchers see themselves as an "endangered species" (Jobes, 1979).

Indians, mostly Navajo, are estimated to represent nearly half of the members of households making grazing use of public lands in the Planning Unit although they constitute only 25.6 percent of the general population. The relatively large number of Indians in the ranching population reflects the persistence of many Navajo families in traditional, pastoral lifestyles. More than 90 percent of Indian livestock ranchers are in the subsistence size group, and there are fewer than 10 AUs per Indian operator in that size group on the average. Based on interview data, more than four out of five Navajo ranching families live at or below the federal poverty level (which in 1979 was just above $4,000 per year). For them, subsistence ranching provides meat for household consumption and livestock for barter at nearby trading posts.

Average herd sizes among the non-Indian in the ranching population are much larger than the Indian average. Anglos make up 25.0 percent of operators, their families, and other persons

TABLE 2-10

BLM RANCHING POPULATION, 1978

County	Ranching Population 1/,a/	Total Population in County 2/	Ranching Population Percent of Total Population
La Plata	65	25,400	0.3
Rio Arriba	225	28,200	0.8
San Juan	710	74,800	0.9
Totals, Three-County Area	1,000	128,400	0.8
Outside Three-County Area	70	---	---
Total	1,070	---	---

Sources: 1/ Harbridge House, 1980.

2/ Provisional estimates for La Plata County supplied by the Job Service of Colorado, Division of Employment and Training, 1979. Provisional estimates for San Juan and Rio Arriba Counties supplied by the University of New Mexico, Bureau of Business and Economic Research, 1979.

Notes: a/ Ranching population includes all households directly related to, but not necessarily primarily dependent on, ranching in the San Juan Planning Unit.

TABLE 2-11

BLM RANCHING POPULATION BY RACIAL OR ETHNIC BACKGROUND, 1978

Racial/Ethnic Group	Members in Ranching Population	Percent of Ranching Population	AUs Controlled a/	Percent of AUs
Anglo	250	25.0	7,380	61.6
Hispanic	234	23.4	3,000	25.0
Indian	516	51.6	1,600	13.4
Totals, Three-County Area	1,000	100.0	11,980	100.0
Outside Three-County Area	70	---	---	---
Total	1,070	---	---	---

Source: Harbridge House, 1980.

Note: a/ Figures have been rounded, and may vary from totals of ranch-by-ranch estimates used in ranch size class tables.

directly tied to grazing use of public lands in the Planning Unit, and the average number of AUs per Anglo operator is 95. Hispanos make up 23.4 percent of the total ranching population, and their ranches have an average of 53 AUs. As shown in Table 2-11, Anglos represent a disproportionately small percentage of the ranching population, relative to their size in the general population, but they own a majority of the livestock. Hispanos control AUs proportionate to their numbers in the population.

The three groups in the ranching population are characterized by distinct but related sets of attitudes and values (refer to Table 2-12). For a century, most residents of the San Juan Basin have shared in a primarily agrarian lifestyle. Each group has maintained a large measure of independence from the other two groups; separate languages, religious traditions, and political and social relationships have survived. However, recent minerals development in the three-county area has resulted in considerable in-migration from outside the San Juan Basin. At the same time, small-scale and subsistence ranching has become less viable economically, leading more native residents of all backgrounds to migrate to the few urban areas in search of work. The presence of persons with in-migrant and urban values in the cities has intensified pressures on the traditionally more rural groups to conform to different lifestyles and value systems.

The ranching population consists almost entirely of persons whose families have lived in the San Juan Basin for more than three decades (Harbridge House, 1980). Many of the families share an outlook which emphasizes the importance of individual independence, self-sufficiency, and equality. Government regulation, urban interdependence, and occupational heirarchies are resented. Ranching families emphasize the importance of living as a family in proximity to relatives and long-time friends; the sense of community felt with others in the area; and the perception that ranching is both attractive and natural as a traditional, famly-oriented way of life. (Harbridge House 1980). Most non-Indian ranchers feel that through hard work and individual intiative they can harness nature's forces to produce food and fibre for themselves and their communities.

Indians within the ranching population exhibit a very different set of lifestyles from other ranchers, and many of their fundamental beliefs differ also. For example, the Navajos traditionally emphasize the idea of harmony between man and nature, so that they do not feel the confidence other ranchers often show in improving or controlling their natural environment. The perceived key to survivial is to accept and live with nature rather than to change or manage it (Witherspoon, 1970). Also important is the acknowledgement of the primacy of ties to clan and tribe and living as an integral part of these larger units (Bureau of Indian Affairs, 1976a).

Despite poor financial returns from ranching, ranchers and members of their families choose to persist in ranching lifestyles. They accept a measure of material deprivation in order to enjoy the well-being they derive from ranch living (Smith and Martin, 1972). Ranching is felt to be based on hard work and self-discipline, while urban living is believed to emphasize leisure and materialism (Vogt, 1955; Fleigel, 1976). In this way, ranch work is felt to be natural and moral, whereas many of the jobs and activities in cities are seen to be artificial and decadent. Although few ranchers are able to support themselves and their families by ranching alone, many continue to hold onto ranches while having off-ranch jobs. Identity as a rancher, and daily connection with ranching, if only with ranch scenes, are highly prized. Most ranchers value the opportunities to work and live with their families in a ranch setting, to spend a lot of time out-of-doors and in direct relationship to nature, and to control their own lives and business

TABLE 2-12

VALUES OF GROUPS IN THE RANCHING POPULATION, THREE-COUNTY AREA

Values Mentioned	Percent of Each Group Mentioning Value		
	Anglo	Hispanic	Indian
Family	55	47	25
Clan or community	34	40	86
Land or physical environment	23	18	86
Climate and opportunity to work outdoors	30	18	0
Independence and self-sufficiency	23	23	8

Source: Harbridge House, 1980.

TABLE 2-13

FULL-TIME EMPLOYMENT,
THREE-COUNTY AREA, 1978

Economic Sector	La Plata County[1/]	Rio Arriba County[2/]	San Juan County[2/]	Totals
Ranching in Planning Unit	20	57	198	275
Other Agriculture	179	275	377	731
Manufacturing	629	282	1,469	2,380
Mining	47	54	2,989	3,090
Construction	550	253	4,820	5,623
Transportation, Communications and Utilities	418	267	3,230	3,915
Trade	2,324	1,097	5,621	9,042
Finance, Insurance and Real Estate	332	193	785	1,310
Services	2,678	1,385	7,318	11,381
Government	2,165	2,359	4,458	8,982
Totals	9,342	6,222	31,165	46,729

Sources: 1/ U.S. Department of Commerce, Bureau of Economic Analysis, 1979.

2/ New Mexico Employment Security Commission, Research and Statistics Division, 1979.

(refer to Table 2-12). Ranching is considered to be a basic industry (together with other kinds of agriculture and mining) on which human progress and economic prosperity depend. It has importance disproportionate to its economic value because it is seen as the continuance of long-established communities and ways of living.

Many ranchers see the federal government (specifically, the Bureau of Land Management) as being actively opposed to the maintenance of their distinctive ways of life. The perception is greatest among native Anglo ranchers for whom some of the attractiveness of ranching is being offset by their perception that the federal government is taking an increasingly active role in overseeing and regulating their businesses. More than three-quarters of the ranchers and members of their families interviewed by Harbridge House expressed anxiety and alarm about recent actions taken by the BLM and other federal agencies. The provisions of recently adopted or proposed Allotment Management Plans (AMPs) are perceived to be overly restrictive and occasionally capricious. Among non-Indian ranchers, there is also general anxiety as a result of fears relating to the Navajo-Hopi land acquisition. Among Navajos, there is a general distrust of outside decision-making which would affect the use and distribution of local and tribal resources.

Characteristics of the Regional Economy

In 1978, an estimated 46,729 persons were employed full-time in all major sectors of the economy within the three-county area. Jobs on ranches with BLM grazing allotments in the Planning Unit represented less than 0.6 percent of this total, and the total number of all full-time jobs in the agricultural sector consitituted 2.2 percent. The distribution of employment by economic sector is shown in Table 2-13. In the same year, an estimated $440 million dollars in total personal income was generated by the regional economy. Ranch operations that might be affected by the proposed programs supplied less than 0.3 percent of this total, while the agricultural sector as a whole contributed 1.5 percent of total personal income. The distribution of total personal income is given in Table 2-14.

Despite the rapid development of a regional economy, with a minerals resource base focused on Farmington and its environs, many residents of the San Juan Basin live with little relationship to modern economic institutions and structure. Especially among the rural, traditional Navajo, economic self-sufficiency persists. These Indians are employed chiefly in subsistence ranching and handicrafts activities that have been practiced for two centuries or more (Nagel, 1974). Except when these residents make a special trip into town, they take their trade to local trading posts whose operators continue in their role as merchants, bankers, and brokers (Federal Trade Commission, 1973). For this portion of the population, the trader is the principal link between traditional and modern economic orders.

As the data in Tables 2-13 and -14 suggest, the agricultural sector in general and ranching in specific make a relatively small contribution to the overall economic structure in the San Juan Basin. As a result, inter-industry links to ranching are weak and the amount of employment and income indirectly dependent on ranch production is relatively small (less than 2 percent of either total).

TABLE 2-14

TOTAL PERSONAL INCOME, THREE-COUNTY AREA, 1978
(in thousands of 1978 dollars)

Economic Sector	La Plata County	Rio Arriba County	San Juan County	Totals
Ranching in Planning Unit	26	71	246	343
Other Agriculture	2,474	1,194	2,569	6,237
Manufacturing	7,770	2,225	13,890	23,885
Mining	1,330	1,050	48,640	51,020
Construction	8,990	3,020	46,275	58,285
Transportation, Communications and Utilities	7,895	3,245	44,795	55,935
Trade	20,080	7,270	40,455	67,805
Finance, Insurance and Real Estate	4,180	1,680	7,155	13,015
Services	26,210	13,890	29,070	69,170
Government	25,000	22,355	46,650	94,005
Totals	103,955	56,000	279,745	439,700

Source: Harbridge House, based on information supplied by U.S. Department of Commerce, Bureau of Economic Analysis, 1979.

Economics of Ranch Operation

In recent decades, ranching and agriculture in the San Juan Basin have been surpassed in regional importance by mining and related activities. However, in rural parts of the three-county area ranching is still locally important, and public land is a key factor in this ranching. Ranchers with allotments in the Planning Unit depend on public land for roughly half of their livestock forage, as shown in Table 2-15. However, this dependence is much greater than the figures suggest. Most grazing permits cover a period of less than 12 months, frequently four months, six months, or eight months. During the periods for which grazing permits are issued, public land in the Planning Unit provides about two-thirds of the utilized livestock forage.

In general, smaller ranching operations are more dependent on public land than larger ones. Nearly 85 percent of the cattle ranchers run fewer than 75 cattle yearlong, and approximately 92 percent of the sheep growers have fewer than 370 sheep. The average herd size for cattle ranches is 43 and for sheep ranches, 123. As shown in Table 2-15, cattle ranchers with fewer than 75 AUs rely on public land for 55 percent of livestock forage, whereas those with 175 or more AUs depend on such range for less than half of their needs. A large number of subsistence ranch operators hold permits for eight months' use or more, while ranchers with medium and large commercial-size operations commonly use public land for shorter seasons. During permit periods, percent dependency varies little by type of ranch. However, overall, local sheep growers depend more on public land than cattlemen (62 percent compared to 49 percent).

Costs, receipts, and returns for both types of operations vary significantly by size, (refer to Table 2-16), but few ranches in the San Juan Basin are large enough to be profitable in business terms. Typically, livestock sales from these ranches cover operating costs, although among subsistence operators, the margin is only $160 annually. When costs of depreciation, insurance, and interest expense are considered, these ranches show losses. The losses are increased when the cost of the operators' time spent participating in the ranch business is considered. Percent return on investment, as shown in Table 2-17, is negative in all size groups and ranch types, ranging from an annual loss of 18.0 percent among cattle ranches with fewer than 75 head, to a loss of 1.2 percent among cattle ranches with 350 head or more. In fact, interviews with ranchers in the three-county area indicate that most ignore depreciation, and regard net cash income as their ranching profit.

Table 2-17 indicates estimated total costs, receipts and returns from livestock ranches using public land in the Planning Unit. As shown, sale prices of livestock from these ranches totalled approximately $1,418,550 in 1978, with 87.6 percent of that total coming from cattle sales. Net cash income equaled $328,465. If this amount is treated as personal income, as most ranchers consider it to be, it represents an average income from ranching of $1,265 per operation, or $307 per capita in the ranching population. Even among large commercial-size ranches incomes are comparatively low. Net cash income is estimated at $171,210 total in this group, or slightly more than $28,500 per ranch. However, such large operations must make some provision for depreciation and other such costs, making less than half that amount available to these ranchers and their families as personal income. Consequently, it is necessary for ranchers in all size groups to supplement earnings from livestock sales with off-ranch income (refer to Table 2-18).

TABLE 2-15

DEPENDENCE ON PUBLIC LAND IN SAN JUAN PLANNING UNIT BY RANCH SIZE GROUP, 1978

Ranch Type[a]	Size Group[b]	Number of Ranches[c]	AUMs[d]	Percent Dependence During Permit Period[e]	Percent Dependence Yearlong
Cattle	All	199	126,558	66	49
	Subsistence	168	39,332	65	55
	Small Commercial	17	21,701	60	50
	Medium Commercial	8	26,557	67	42
	Large Commercial	6	38,968	69	48
Sheep	All	61	18,829	68	62
All	All	260	145,387	66 (avg.)	51 (avg.)

Source: Harbridge House, 1980.

Notes: a/ In cases of mixed operations, ranch types determined on basis of animals of largest number. Horses classified with cattle; goats with sheep.

b/ Size groups defined as 1-74 AUs (Subsistence), 75-174 AUs (Small Commercial), 175-349 AUs (Medium Commercial), and 350 or more AUs (Large Commercial).

c/ Numbers include estimates of operators using community and tribal allotments.

d/ AUMs shown are authorized levels on public land, together with private and state AUMs.

e/ Dependence during periods from four to twelve months.

TABLE 2-16

TYPICAL COSTS, RECEIPTS, AND RETURNS FOR LIVESTOCK RANCHES USING PUBLIC LAND IN PLANNING UNIT, BY SIZE, 1978

Budget Item	Cattle Ranches						
	Subsistence Size	Small Commercial Size	Medium Commercial Size	Large Commercial Size	Average, All Sizes	Sheep Ranches	Average, All Types
Livestock Sales	$ 1,610	$ 13,445	$ 35,480	$ 76,715	$ 6,245	$ 2,875	$ 5,455
Operating Costs	1,450	11,305	25,980	48,180	4,685	2,580	4,190
Net Cash Income	160	2,140	9,500	28,535	1,560	295	1,265
Ownership Costs[a/]	950	7,555	17,865	34,945	3,220	1,700	2,865
Net Business Income	(790)[c/]	(5,415)	(8,365)	(6,410)	(1,660)	(1,415)	(1,600)
Overhead and Management Costs[b/]	3,380	6,760	8,095	9,275	4,035	5,070	4,280
Final Business Profit	(4,170)	(12,175)	(16,460)	(15,685)	(5,695)	(6,485)	(5,880)
Capital Investment	$23,140	$206,350	$518,610	$1,272,580	$96,380	$68,250	89,780
Percent Return or Investment	(18.0)	(5.9)	(3.2)	(1.2)	(5.9)	(9.5)	(6.5)

Source: Harbridge House, 1980.

Notes: a/ Ownership Costs include depreciation of capital investment, insurance, and interest expense.

b/ Overhead and Management Costs include return to operator for his labor at minimum wage, and overhead on business costs.

c/ Parenthesis indicate negative values.

TABLE 2-17

TOTAL COSTS, RECEIPTS, AND RETURNS FOR LIVESTOCK RANCHES USING PUBLIC LAND IN PLANNING UNIT, BY SIZE

Budget Item	Cattle Ranches					Sheep Ranches	All Types
	Subsistence Size	Small Commercial Size	Medium Commercial Size	Large Commercial Size	All Sizes		
Livestock Sales	$ 270,480	$ 228,565	$ 283,840	$ 460,290	$ 1,243,175	$ 175,375	$ 1,418,550
Operating Costs	243,600	192,185	207,840	289,080	932,705	157,380	1,090,085
Net Cash Income	26,880	36,380	76,000	171,210	310,470	17,995	328,465
Ownership Costs[a/]	159,600	128,435	142,920	209,670	640,625	103,700	744,325
Net Business Income	(132,720)[c/]	(92,055)	(66,920)	(38,460)	(330,155)	(85,705)	(415,860)
Overhead and Management Costs[b/]	567,840	114,920	64,760	55,650	803,170	309,270	1,112,440
Final Business Profit	(700,560)	(206,975)	(131,680)	(94,110)	(1,133,325)	(394,975)	(1,528,300)
Capital Investment	$3,887,795	$3,507,950	$4,148,880	$7,635,480	$19,180,105	$4,163,250	$23,343,355
Percent Return or Investment	(18.0)	(5.9)	(3.2)	(1.2)	(5.9)	(9.5)	(6.5)

Source: Harbridge House, 1980.

Notes: a/ Ownership Costs include depreciation of capital investment, insurance, and interest expense.

b/ Overhead and Management Costs include return to operator for his labor at minimum wage, and overhead on business costs.

c/ Parenthesis indicate negative values.

Based on data obtained in interviews with ranchers in the Planning Unit, operators with fewer than 75 cattle depend on ranching for an average of only 19 percent of their income, drawing on farming for 12 percent and on other sources for 69 percent. By contrast, large operators rely on cattle ranching for 97 percent of their income. As an average, all sizes and types of ranches derive 38 percent of personal income from ranching. This figure and the average net cash income shown in Table 2-16 suggest an average income (from ranching and other sources) for ranching families of approximately $3,500. Levels of income reported for rural Navajo in the three-county area (including both those engaged in ranching and those not) averaged near $3,000 per household in 1977.

In the face of the low economic returns from their ranching activities, many operators must borrow against the value of their ranches to support themselves, their families, and any necessary new investment. In addition, seasonal demands for cash require some borrowing. For both reasons, the value of the ranch as it is generally recognized by both borrowers and lenders is critically important. In recent years, values have risen with the rising cost of land and the limited availability of AUMs. For many ranch families, appreciation in ranch value represents the only kind of profit they have been able to make, and this increased value contains their chief savings.

In the San Juan Basin, the commonly accepted method of valuing ranches for loans is on the total number of AUMs for which the rancher is authorized, both on private land and through grazing permits on public and state land. The loan value recently assigned to a public land AUM has been between $40 and $50, and that assigned to state and private AUMs has been between $70 and $90. Thus, the total potential loan base for ranchers within the Planning Unit is approximately $6.5 million (Harbridge House, 1980). The loan value of a public land AUM has been falling as a result of uncertainty among lenders over BLM plans for grazing management. Although the BLM Area Manager in Farmington has contacted local ranchers and businessmen with regard to the process by which grazing plans are being developed, the issue of possible decreases in AUMs is as yet unresolved. Figures on the total volume of loans outstanding on the security of ranches using federal AUMs are not available, but previous studies of levels of financing activity in connection with similar types of ranching suggest that the value of loans which might be affected would fall into the range of $2.2 to $4.6 million (Vanvig, 1975; Peryam and Olson, 1975).

TABLE 2-18

PERCENT OF PERSONAL INCOME FROM RANCHING, FARMING AND OTHER SOURCES BY SIZE GROUP, 1978

Source of Income Ranchers	Cattle Ranchers					Sheep Ranchers	All Ranchers
	Subsistence	Small Commercial	Medium Commercial	Large Commercial	All		
Ranching	19	43	64	97	31	60	38
Farming	12	17	0	0	14	0	11
Other Sources	69	40	36	3	55	40	51
Total	100	100	100	100	100	100	100

Source: Harbridge House, Inc., 1980.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

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ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter identifies and evaluates impacts to the human and natural environment which would result from implementation of the Proposed Action (PA) and the alternatives of No Action (NA), Elimination of Livestock Grazing (ELG), Maximization of Livestock Forage Production (MLFP), and Enhancement of Other Resource Values (EORV). (None of the alternatives would have impacts on minerals, climate, geology, geography, or paleontology. For this reason they were not included in the following discussion.) Each impact is identified in a cause-and-effect relationship, including those secondary impacts having significance. All impacts are traced to the point of insignificance.

The cause of an impact is tied to a component of the Proposed Action and alternatives as identified in Chapter 1. The effect of the impact is tied to a component of the environment described in Chapter 2. The impacts discussed in this chapter were assessed on the basis of the description of the Proposed Action and alternatives presented in Chapter 1. This assessment took into account the design features and federally required measures to minimize environmental impacts. The absence of discussion of impacts indicates that the analyses either determined that an impact would not occur, or that it would be insignificant. Because of the design features included in Chapter 1 as standard operating procedures, and because of the BLM's commitment to implementing these design features, the impacts assessed in this chapter are considered to be unavoidable.

There was no detailed study as to which alternative would be the most efficient in conserving energy, but some general observations are possible. The Proposed Action and MLFP Alternative would require mechanical vegetation treatments on 53,999 acres and 212,801 acres respectively. Chemical treatment would be applied to 25,709 acres in the MLFP Alternative. Although both alternatives would require the expenditure of energy, the MLFP Alternative would require a greater amount.

The NA, ELG, and EORV Alternatives would require approximately the same energy expenditure. Implementation of any one of these would be conservative of energy when compared to the Proposed Action or the MLFP Alternative.

The Proposed Action would require energy expenditure at a level somewhere between the higher MLFP Alternative and the other three lower alternatives. There would be optimum

achievement of resource potentials in the long term with the Proposed Action. In addition, the PA would be more balanced in achieving the objectives of a grazing management system that would in the long term meet the demand for livestock forage production and maximize the benefits to wildlife, wild horses, and other resource values, both renewable and depletable.

The description of the analysis of impacts follows in order of diminishing consequence except for Social and Economic Conditions. These impacts are discussed last, enabling a summation of the impacts of all the natural resources on the human resource. The analysis of impacts is presented by resource and by alternative. A brief summary is provided only at the end of sections containing complex or lengthy discussions of impacts.

The comparisons of short-term use and long-term productivity for the Proposed Action and the alternatives are combined under that heading towards the end of the chapter. The Irreversible and Irretrievable Commitments of Resources have also been combined in a similar manner at the end of the chapter. Alternatives resulting in no loss of long-term productivity or causing no commitment of resources that are irretrievable or irreversible are not discussed.

Several basic assumptions and analysis guidelines have been made by BLM specialists in assessing the impacts on various environmental elements.

1. Short-term impacts are those which would occur within the nine years after implementation has begun. Long-term impacts are those which would still be present by the year 2000.

2. Current uses of private lands in the Planning Unit (if these lands are currently being used for grazing) would remain essentially the same. These lands are being used primarily for livestock grazing or for activities associated with grazing operations.

3. Impacts on vegetation are described in terms of the entire, rangewide resource, with specific consideration given to localized changes at construction sites and near water facilities. Variations in impacts among different pastures are not enumerated.

4. The BLM would have the funds and manpower available to implement the proposal.

5. The BLM would verify the level of impacts and monitor and evaluate grazing management systems prior to and after they are implemented so that necessary adjustments in those systems not meeting multiple use objectives can be made. Monitoring of key forage species and wildlife populations would be done annually.

6. Site-specific Environmental Assessments (EAs) would be written to assess site-specific impacts of each grazing management system. Onsite analysis of areas proposed for inclusion in proposed vegetation treatments would be made to avoid highly desirable wildlife habitat and cultural resources that would be susceptible to the treatments being considered.

7. Wildlife would continue to graze pastures that are being rested from livestock grazing.

8. Because information concerning actual livestock use has not been collected, an exact amount is not known. Estimates by BLM specialists are that actual use is approximately equal to

average licensed use although a few operations probably vary from this amount to a small extent each year.

9. Technical references demonstrate that there is considerable variation in the response of vegetation and other resources to grazing and wildlife management programs. Scientific knowledge is not presently available to assess long-term impacts to the fullest extent. The techniques available for predicting impacts are not precise, but rather provide an indication of the type and general magnitude of expected changes. Although impacts are stated in quantitative terms where possible, the numbers given should be taken as an indication of approximate, not absolute, amounts of change.

10. Except for social and economic conditions, assessments for all resources were based upon grazing adjustments, vegetation treatments, and construction of developments related to forage AUMs produced on the public lands of all allotments.

ASSESSMENT OF IMPACTS

Vegetation

Proposed Action

Vegetation would be destroyed at the locations of the proposed range developments. These areas of vegetation destruction would total 96 acres in the short term. The areal extent where vegetation would be excluded permanently by these facilities would be 31 acres. Appendix H-3 shows details of losses for individual allotments affected. Most of the developments would benefit rangelands by affecting grazing uniformity and patterns of use by livestock; these benefits would more than offset the adverse impacts of their construction.

The proposed vegetation treatments would result in a change in aspect to a grassland vegetation type on 52,639 acres of sagebrush and 1,360 acres of pinyon-juniper. The effects of the vegetation treatments would be to change plant composition to greater amounts of forage-producing species (grasses and forbs) and lesser amounts of woody species.

Plowing and seeding would be used under the PA on 6,914 acres of sagebrush that currently has essentially no understory of forage-producing species. Results on similarly treated areas in the Planning Unit indicate that this treatment would kill 90 to 95 percent of the sagebrush. This estimate is consistent with that reported by Pechanec et al. (1954) in their discussion of methods for controlling sagebrush. Chaining and seeding of sagebrush would be used on 16,305 acres. This treatment would be used on areas that currently have quantities of understory forage-producing species great enough to preserve, but in quantities too low to produce desirable stands through spreading and reproduction. It would also be used on areas too rocky to plow. Chaining alone would be used on 29,420 acres of sagebrush that contain sufficient quantities of understory forage-producing species to produce desirable stands through spreading and reproduction. Chaining treatments for sagebrush control would kill 70 to 75 percent of the existing sagebrush plants.

When pinyon-juniper stands are chained the expected kill would be about 70 percent. This is about the amount of kill that has been obtained on previously treated areas in the

Planning Unit. It is also about the average kill reported by Springfield (1976) in his evaluation of pinyon-juniper management practices. Aro (1971) surveyed results of pinyon-juniper control projects in Colorado, Utah, Arizona, and New Mexico. He reported that understory shrubs and small trees would not be killed by chaining like the older, larger trees. These smaller plants bend as the chain pulls against them, or the chain passes over them as it rides over the larger trees. Aro (1971) estimated the overall average kill from double chaining to be about 60 percent; however, on one site in Colorado tree kill of about 95 percent was obtained from a single chaining.

Areas plowed and seeded or chained and seeded as part of the PA would be almost barren immediately after treatment, but vegetation would increase on these areas as plants of the seeded species became established and developed to maturity. Two growing seasons would be required for the seeded stands to reach maturity. Results from past treatments conducted by the BLM in this area indicate that seedings would be successful about 95 percent of the time. Areas where seedings failed would have to be reseeded.

After treatments are complete and seeded stands have matured, production of usable air-dry forage would be increased from an average of 50 pounds per acre to between 66 and 105 pounds per acre on areas where sagebrush is treated, and from an average of 30 pounds per acre to between 88 and 105 pounds per acre on areas where pinyon-juniper is treated. These projections are based on results from similarly treated areas in the Planning Unit, and are well within the limits of forage increases obtained in research studies. For instance, Pingrey and Dortignac (1959) reported forage increases of up to ten fold on areas where sagebrush was controlled and crested wheatgrass was planted in north-central New Mexico. Pechanec et al. (1954) reported forage production increases from 69 percent up to 25 fold resulting from sagebrush control by various methods at several locations in the west. The average increase in forage production for sites surveyed by Aro (1971) where pinyon-juniper control had been applied was about 100 percent. However, in Arizona Clary (1971) measured nearly a four-fold increase in perennial grass production and more than a four-fold increase in total understory production in response to juniper control.

Vegetation cover would be reduced on areas where brush control is part of the vegetation treatment. Transect records show that the vegetation ground cover is reduced from 22 percent to 16 percent on areas where sagebrush has been treated and from 21 percent to 19 percent on areas where pinyon-juniper has been treated. The major reason for the reduction in plant cover would be that a basal cover of grasses was replacing the crown cover of shrubs and trees in the measurements. The trees and shrubs would provide a greater degree of cover than grasses.

Sites where brush control is a part of the vegetation treatment under the PA would, in time, tend to revert back to dominance by the woody species. Hughes (1980) found that woody species (including sagebrush) increased and herbaceous species decreased over time on areas where the woody species had been controlled and where domestic grazing animals had been excluded. The time required for reinvasion of the controlled species would be variable, depending on many factors, including grazing management. The works of Sneva (1972) in eastern Oregon and Johnson (1969) in central Wyoming indicate that from 10 to 20 years would be required to lose the benefits of sagebrush treatment by reinvasion. Thus, maintenance of brush control treatments would be required at intervals of about 10 years for the vegetation treatment benefits to persist indefinitely.

Impacts from the proposed changes in level of grazing and livestock management would be experienced where stocking rates were adjusted to the grazing capacity and where rest periods were initiated during critical stages of plant development. These adjustments for individual allotments are shown in Appendix E-8. Grazing would not change from the 6-year average licensed use on 10,704 acres, would be reduced on 651,771 acres, and would be increased on 616,146 acres. Tables 3-1, 3-2, and 3-3 show acreages by vegetation type and present range condition of the areas on which grazing would be unchanged, reduced, or increased.

On 33 allotments containing a total of 261,299 acres, grazing would be reduced and grazing management would be changed under the PA so that both proposed spring and summer rests would be initiated. This would result in increased cover of forage-producing species about threefold on all except the steep and rocky, and barren vegetation types, where cover is not expected to change because these areas are infrequently grazed by livestock now. These predicted changes in cover are consistent with those found by research personnel of the U.S. Forest Service (USDA, 1972) on the San Luis Watershed. Studies there showed that cover of grasses increased about three times in response to proper stocking and summer deferment. The area where these studies were conducted has many species in common with the San Juan Planning Unit and has a similar climate. Reynolds and Martin (1968) reported similar responses to deferment of grazing for four years during the growing season in Arizona. The total vegetation cover increases resulting from grazing management would range from less than 1 to 7 percentage points. The least change would occur on areas occupied by pinyon-juniper or sagebrush in dense stands, and the greatest change would be on grasslands. Typically, the cover on sagebrush areas would go from 22 to 23 percent and on grassland it would go from 10 to 14 percent. Methods used to predict future cover are described in Appendix C-5. Appendix E-9 shows the estimated future cover values for each vegetation type in each allotment.

On allotments containing 172,907 acres, grazing would be reduced and only spring rest would be initiated by the Proposed Action. On these allotments the vegetation cover would increase because of increases in the cover of forage-producing species. However, in this case, the cool-season species would increase most because the proposed spring rest period corresponds to their critical growth stages (vegetative growth through flowering). Resting cool-season species during their critical growth stages would avoid use of these plants during periods of low carbohydrate reserves. From his review, Weinmann (1961) concluded that the most common seasonal pattern is for carbohydrate reserves to decline with the initiation of new growth in the spring and increase as the plants mature. Hyder and Sneva (1959) found a second low in crested wheatgrass at the budding to flowering stage. Aldous (1930) and Granfield (1930) described another pattern in which carbohydrate reserves declined until mid-season and the low point generally coincided with the budding through fruiting stages of plant development.

Hedrick (1958) concluded that the effect of herbage removal on the plant is dependent on intensity, frequency, and season of use. He further stated that the greatest damage occurs when herbage is removed during periods of minimum food storage. Therefore, avoidance of grazing during these times would allow these plants to gain in vigor and cover. Typically the vegetation cover would increase from average cover values of about 20 percent to about 21 percent on these areas.

On Allotment 5023, which contains 240 acres, the average vegetation cover would increase from 14 to 15 percent. In this case the increase would be mainly from warm-season

TABLE 3-1

ACREAGE CONTAINED WITHIN ALLOTMENTS
IN WHICH GRAZING WOULD NOT CHANGE
FROM THE ACTIVE LICENSED USE (6-YR.AVG.)
UNDER THE PROPOSED ACTION

Vegetation Type	Condition			Total
	Good	Fair	Poor	
Grassland	852			852
Sagebrush		2,914		2,914
Shadscale		108		108
Greasewood		399		399
Pinyon-Juniper	5,397			5,397
Steep and Rocky			683	683
Barren			33	33
Rabbitbrush		318		318
TOTAL	6,249	3,739	716	10,704

Source: Appendices E-4 and E-8.

TABLE 3-2

ACREAGE CONTAINED WITHIN ALLOTMENTS
IN WHICH GRAZING WOULD BE REDUCED BELOW ACTIVE
LICENSED USE (6-YR. AVG.) BY THE PROPOSED ACTION

Vegetation Type	Condition			Total
	Good	Fair	Poor	
Grassland	8,087	7,004	217	15,308
Sagebrush	36,100	156,556	50,137	242,793
Shadscale	1,039	638	2,964	4,641
Greasewood	484	19,232	2,118	21,834
Pinyon-Juniper	41,307	163,861	48,878	254,046
Steep and Rocky	393	16,739	72,236	89,368
Barren	37	2,582	17,292	19,911
Meadow	28	1,117	578	1,723
Half-shrub	396	489		885
Annuals			442	442
Rabbitbrush	76	13	710	799
Broadleaf trees	21			21
TOTAL	87,968	368,231	195,572	651,771

Source: Appendices E-4 and E-8.

TABLE 3-3

ACREAGE CONTAINED WITHIN ALLOTMENTS
IN WHICH GRAZING WOULD BE INCREASED ABOVE ACTIVE
LICENSED USE (6-YR. AVG.) BY THE PROPOSED ACTION

Vegetation Type	Condition			Total
	Good	Fair	Poor	
Grassland	11,172	8,780		19,952
Sagebrush	54,168	132,170	24,401	210,739
Shadscale	140	8,461	3,247	11,848
Greasewood	4,349	9,020	5,508	18,877
Pinyon-Juniper	38,012	185,272	42,105	265,389
Steep and Rocky	1,118	5,700	50,709	57,527
Barren	244	1,702	22,252	24,198
Meadow	10	181	188	379
Half-snrub		2,889	259	3,148
Annuals	54			54
Rabbitbrusn		3,501		3,501
Broadleaf trees			12	12
Fourwing saltbusn		522		522
TOTAL	109,267	358,198	148,681	616,146

Source: Appendices E-4 and E-8.

forage-producing species because this allotment is currently being grazed during the proposed summer rest period. Initiation of summer rest would allow these plants to complete critical stages of development without being grazed for at least one out of three years.

Allotment 5031 contains 10,704 acres on which allocation of forage to livestock would not change under the PA. Both spring and summer rest periods would be initiated. This would allow the forage-producing species to complete their critical developmental stages without being grazed for at least one out of three years. The vigor and reproduction of these species would improve, resulting in cover increases of 4 percent on the grassland, 2 percent on the pinyon-juniper and sagebrush, and 1 percent on the shadscale and rabbitbrush vegetation types. The acreage and present condition of the various vegetation types in this allotment are shown in Table 3-1.

There are 616,146 acres in 74 allotments on which grazing would be increased by the PA. (The amount occupied by various vegetation types and the present condition are shown in Table 3-3). On one allotment containing 2,368 acres, summer rest would be initiated. On 31 allotments containing 203,748 acres, spring rest would be initiated. On 30 allotments containing 249,048 acres, both spring and summer rest would be initiated. This rest would allow forage-producing species to go through critical developmental stages without being grazed. This would allow vigor and reproduction of these species to improve, resulting in increased cover. Spring rest would be beneficial to cool-season species and summer rest would be beneficial to warm-season species. Typically the vegetation cover would increase from 19 to 20 percent on sagebrush and pinyon-juniper and from 9 to 12 percent on grassland. Expected cover changes for each vegetation type in each allotment are shown in Appendix E-9.

A relationship between cover and production was calculated by using data from the San Luis Watershed Study (USDA, 1972). [This relationship is described in Appendix C-6. It is similar to results reported by Martin (1970), who reported that perennial grass intercept is positively correlated to perennial grass herbage production for studies in Arizona.] An increase of one percent in cover by forage-producing species results in increased production of air-dry herbage of 60 pounds per acre. Using this relationship, a 50 percent proper use factor, and the weighted average cover change, forage production changes were projected. These projections indicate that forage production would increase due to grazing management by 40,071 AUMs for the whole Planning Unit. On public lands, this increase is projected to be 29,048. The forage production increases resulting from vegetation treatments would be 2,759 AUMs. Thus, the total projected forage production increase on public lands would be 31,807 AUMs, which would raise total production from 75,410 AUMs to 107,217 AUMs.

As the cover of forage-producing plants increased under the PA, the range condition would improve. The time required for an improvement of range condition class cannot be determined with existing data and study results. However, estimates were made by BLM personnel of livestock forage condition classes that could be realized under different levels of management for each vegetation type in each allotment. These estimates are shown in Appendix E-10. Total acreages estimated to occur in each condition class as a result of the management and treatments under the Proposed Action (PA) would compare to the existing condition as follows:

	Good	Fair	Poor
Existing (acres)	203,484	730,168	344,969
PA (acres)	371,721	673,719	233,181

Summary. Under the Proposed Action, vegetation would be permanently lost on about 31 acres that would be occupied by range developments. Vegetation treatments would change 52,639 acres of sagebrush and 1,360 acres of pinyon-juniper to a grassland aspect. The cover of the sagebrush areas would decrease from 22 percent to 16 percent and the production of useable air-dry forage would increase from 50 pounds per acre to between 66 and 105 pounds per acre. The cover of pinyon-juniper areas would decrease from 21 percent to 19 percent and the production of useable air-dry forage would increase from 30 pounds per acre to between 88 and 105 pounds per acre.

The overall average increase in total vegetation cover would be less than 1 percentage point, but increases as high as 7 percentage points would occur on certain sites. Production of useable forage would increase about 42,830 AUMs within the Planning Unit, of which 31,807 AUMs would come from public lands. This would raise production on public lands from 75,410 AUMs to 107,217 AUMs. The acreage in good livestock forage condition class would eventually increase from 203,484 acres to 371,721 acres, while that in fair and poor condition classes would decrease from 730,168 acres to 673,719 acres and from 344,969 acres to 233,181 acres, respectively.

Threatened or Endangered Plants. Mesa Verde cactus (Sclerocactus mesae-verdae), a threatened species, is known to occur in or near areas on which range developments are proposed. Standard operating procedures as stated in Chapter 1 will ensure that no impacts to this species will occur from proposed range developments. Neither Mesa Verde cactus nor Knowlton cactus (Pediocactus knowltonii), an endangered species, is grazed by livestock. Therefore, the only impact on these plants from livestock would be occasional damage from animals stepping on them. This occurrence would be rare because the sites where these plants grow are not frequently used by livestock due mainly to steepness and low availability of forage that attracts livestock.

No Action Alternative

The cover, production, vigor, and proportion of total vegetative composition of forage-producing species would decrease on 63 allotments containing 651,771 acres where the proposed decreases in grazing use were not implemented. This impact would be greatest on those areas currently being utilized at levels high above the surveyed grazing capacity because overutilization would continue on these areas. Table 3-2 shows the number of acres of each vegetation type and the present livestock forage range condition of the areas that would be affected. Appendix E-8 shows the amount of the proposed reductions on these lands for individual allotments. There would be a shift of these areas toward lower livestock forage range condition class under the NA Alternative due to the loss of the more desirable forage-producing species.

On one allotment containing 10,704 acres and 74 allotments containing 616,146 acres grazing would continue at levels equal to and below the surveyed grazing capacity, respectively. The number of acres of each vegetation type and their present livestock forage range condition are shown in Tables 3-1 and 3-2. The average cover and production of forage-producing plants on these allotments would increase. This would result in shifts of these areas toward higher livestock forage range condition classes.

The average predicted cover change (Appendix E-9) calculated for this alternative was a net increase of about 0.02 percent. Using the same relationship between cover and production described for the Proposed Action, this would mean an increase in production of 905 AUMs over the whole Planning Unit under the NA Alternative. The amount of additional production from public lands would be 656 AUMs, raising the production from 75,410 AUMs to 75,886 AUMs.

The time required for range condition to shift to another class cannot be predicted with currently available data and study results. The estimates made by BLM personnel of future range condition for each allotment and each vegetation type (shown in Appendix E-10) offer some guidance in predicting this shift. Total acreages for predicted future condition classes under the NA Alternative would compare to the existing condition as follows:

	Good	Fair	Poor
Existing (acres)	203,484	730,168	344,969
NA (acres)	202,832	708,051	367,738

Summary. The net effect of the NA Alternative would be to increase the average cover of forage-producing plants about 0.14 percent; increase forage production 905 AUMs for the Planning Unit (656 AUMs on public lands); decrease the number of acres in good and fair condition from 203,484 to 202,832 and from 730,168 to 708,051, respectively; and to increase the number of acres in poor condition from 344,969 to 367,738.

Threatened or Endangered Plants. Neither Mesa Verde cactus (Sclerocactus mesae-verdae), a threatened species, nor Knowlton cactus (Pediocactus knowltonii), an endangered species, are grazed by livestock. Therefore, the only impact on these plants from livestock would be occasional damage from animals stepping on them. This occurrence would be rare because the sites where these plants grow are not frequently used by livestock. This is due mainly to steepness and low availability of forage that attracts livestock.

Elimination of Livestock Grazing Alternative

Under this alternative, livestock use would be eliminated from 914,490 acres of public lands, 477,251 acres of which are currently being grazed at levels greater than surveyed grazing capacity. On these lands, the cover, productivity, and portion of total plant composition made up by forage species would increase. Cover is estimated to increase by about one percent on these areas. This increase would be caused by eliminating grazing of the forage-producing species and allowing them to gain vigor and reproduce. Forage production would thus increase an estimated 19,000 AUMs. The effects of livestock removal under this alternative are not expected to differ from those of the Proposed Action, based on the findings of Dahl et al. (1976). They concluded from evaluation of grazed and ungrazed sites in the Rio Puerco area of northwestern New Mexico, and from a literature review, that short-term non-use of rangeland is equal to long-term non-use for rangeland restoration. Their observations indicated that cover of bunch grasses (which comprise a major portion of the forage grasses in the San Juan Planning Unit) increase, while the cover of blue grama decrease with long-term non-use.

On 351,712 acres of lands of other ownership, the grazing management would be controlled by the landowner or lessee. For the purpose of this analysis it is assumed that grazing on these lands would not exceed their grazing capacity.

Using the relationship between cover and production described for the PA, the overall production resulting from the NA Alternative would increase by 29,048 AUMs (from 75,410 AUMs to 104,458 AUMs) on public lands.

Elimination of livestock grazing would allow the condition of some rangelands to improve. The time required for an area to change by one condition class cannot be predicted.

However, using the estimates of future range condition (Appendix E-10) and total acreages (according to management method) under the ELG Alternative, the range condition classes would eventually change as follows:

	Good	Fair	Poor
Existing (acres)	203,484	730,168	344,969
ELG (acres)	328,472	708,273	241,876

Summary. The net effects of the ELG Alternative would be increased forage production of 29,048 AUMs on public lands, raising this production from 75,410 AUMs to 104,458 AUMs. The number of acres of land in good condition would increase from 203,484 to 328,472, while the number of acres in fair and poor condition would decrease from 730,168 to 708,273 and from 344,969 to 241,876, respectively.

Threatened or Endangered Plants. There would be no impacts on threatened or endangered plants from this alternative.

Maximization of Livestock Forage Production Alternative

Vegetation would be destroyed on 96 acres used for construction of range developments, and would be permanently excluded on 31 of these acres occupied by these developments.

The vegetation aspect would change from sagebrush to grassland on 103,510 acres that would be treated mechanically for sagebrush control under the MLFP Alternative. The mechanical treatments would kill from 70 to 95 percent of the existing sagebrush plants. Total vegetation cover would decrease from 22 percent to 16 percent, and production of useable air-dry forage would increase from an average of 50 pounds per acre to between 66 and 105 pounds per acre on these areas.

On 108,249 acres the vegetation aspect would be changed from pinyon-juniper to grassland by mechanical treatments. The average total vegetation cover would decrease from 21 to 19 percent and the average production of useable air-dry forage would increase from 30 pounds per acre to between 88 and 105 pounds per acre on these areas. The mechanical treatments for pinyon-juniper control would result in about 70 percent kill of the pinyon and juniper trees.

The predicted results of mechanical vegetation treatments are based on results of previously treated areas in the Planning Unit and information from other literature sources. (See the Proposed Action impact analysis for a more detailed discussion.)

Spraying of 25,705 acres of sagebrush would reduce the total plant cover and kill susceptible forbs on these areas initially. Experimental results of spraying sagebrush in the San Juan Planning Unit do not exist. However, results from California, Wyoming, and Oregon indicate that initial kill of sagebrush would be about 75 to 90 percent (Cornelius and Graham, 1951; Hull and Vaughn, 1951; Hull, Kissinger, and Vaughn, 1952; Hyder, 1953). Forage production from forage grasses and surviving forbs would increase to 2 to 3 times the pretreatment productivity by the third year after treatment (Tabler, 1968; Cornelius and Graham, 1951; Hull, Kissinger, and Vaughn, 1952). Forb productivity would be expected to return to pretreatment level by the fourth year after treatment (Tabler, 1968). The benefits of increased forage

production would begin to decline after about 5 years (Johnson, 1969) under the MLFP Alternative and would be nullified after 9 to 17 years by increased cover of sagebrush through stand regeneration and subsequent reduction of forage production because of plant competition (Thilenius and Brown, 1974; Sneva, 1972). If no follow-up treatments were used, the cover of sagebrush would increase to pretreatment levels after about 14 years (Johnson, 1969).

Grasses are resistant to 2,4-D and therefore would not be harmed by the spraying. The resistance to 2,4-D exhibited by forbs, shrubs, and trees varies. Thus, many common forbs and shrubs that grow in association with the sagebrush would be killed or injured. A list of these plants and their degree of susceptibility to 2,4-D is shown in Table 3-4.

The grazing management under the MLFP Alternative would be the same as under the PA. The major components of this management that would affect vegetation are adjustment of stocking rates to coincide with the grazing capacity, and providing rest from grazing for forage-producing plants during critical stages of development (vegetative growth through flowering) during at least one year out of three. Following this management, the vigor and cover of forage-producing species would increase. (The discussion of impacts on vegetation under the PA gives more details of why these changes are expected.) It is projected that the overall average increase in cover for forage-producing plants resulting from grazing management would be about 0.88 percent.

Using the relationship between cover and production (a one percent increase in cover of forage grasses resulting in an increase of 30 pounds per acre of usable forage), the projected increase in production on public lands resulting from grazing management is 29,048 AUMs. Additionally, 19,196 AUMs of increased production are projected to result from vegetation treatments. These increases would raise the production on public lands from 75,410 AUMs to 123,801 AUMs.

Improved livestock forage range condition would result on some areas from the greater proportion and cover of forage plants. The time required for an area to change to another condition class cannot be predicted with existing data and study results. However, using the estimates (Appendix E-10) of future range condition that could be achieved under different management and treatment conditions, and the total acreages under various types of management and treatments under the MLFP Alternative, the range condition classes would change as follows:

	Good	Fair	Poor
Existing (acres)	203,484	730,168	344,969
ELG (acres)	442,422	626,589	209,610

Summary. The net effects of the MLFP Alternative would include: changing the aspect from sagebrush to grassland on 129,215 acres and from pinyon-juniper to grassland on 108,249 acres by the vegetation treatments; increasing forage production from public lands by 48,391 AUMs (from 75,410 AUMs to 123,801 AUMs); increasing the number of acres in good livestock forage range condition from 203,484 to 442,422; and decreasing the numbers of acres in fair and poor livestock forage range condition from 730,168 to 626,589, and from 344,969 to 209,610, respectively.

Threatened or Endangered Plants. Mesa Verde cactus (Sclerocactus mesae-verdae), a threatened species, is known to occur in or near areas on which range developments are proposed. Standard operating procedures as stated in Chapter 1 will ensure that no impacts to this species

TABLE 3-4

SUSCEPTIBILITY OF MAJOR PLANT SPECIES IN SAGEBRUSH AREAS TO 2,4-D

Scientific Name	Common Name	Susceptibility [a/]
Forbs		
Allium spp.	wild onion	S-I
Ambrosia spp.	ragweed	S
Asclepias spp.	milkweed	R
Aster spp.	aster	I
Astragalus spp.	poison loco	S-I
Chenopodium spp.	goosefoot	S
Cleome spp.	beeplant	I
Delphinium spp.	larkspur	R
Descarainia spp.	tansy mustard	S
Erigeron spp.	fleabane	S-I
Erodium spp.	filaree	S-I
Helianthus annuus	sunflower	S
Hymenoxys richardsoni	Colorado rubberweed	S-I
Lupinus spp.	lupine	S-I
Opuntia spp.	cactus	R
Plantago spp.	Indian wheat	S
Rumex crispus	curly dock Russian	S-I
Salsola kali	thistle groundsel	S-I
Senecio spp.	goldenrod cocklebur	I-R
Solidago spp.		I
Xanthium spp.		S
Trees and Shrubs		
Artemisia filifolia	sand sagebrush	S
Artemisia tridentata	big sagebrush	S-I
Atriplex spp.	saltbush	S-I
Chrysothamnus spp.	rabbitbrush	I
Xanthocephalum sarothrae	broom snakeweed	I

Source: Klingman, 1961.

Note: [a/] S - Plants killed by one or more foliage application of one pound per acre or less: I - plants injured or partially controlled by the above treatment or by treatment with a higher rate; R - plants not damaged or only slightly damaged by foliage application.

will occur from proposed range developments. Neither Mesa Verde cactus nor Knowlton cactus (Pediocactus knowltonii), an endangered species, is grazed by livestock. Therefore, the only impact on these plants from livestock would be occasional damage from animals stepping on them. This occurrence would be rare because the sites where these plants grow are not frequently used by livestock, due mainly to steepness and low availability of forage that attracts livestock.

Enhancement of Other Resource Values Alternative

Under this alternative, the range developments and vegetation treatments would be the same as under the PA. However, grazing levels would be reduced to below the surveyed grazing capacity on 134 allotments containing 1,276,421 acres. A portion or all of each of these allotments is in fair or poor livestock forage range condition class. (Of this total acreage 925,451 acres are public lands and 350,970 acres are lands under other ownership.) The remaining four allotments, containing 2,200 acres that are all in good livestock forage range condition class, would be grazed at the same level under this alternative as under the PA.

Various published reports have dealt with the effects of different levels of rangeland grazing. Pond (1960) measured the effects of three different grazing levels on pastures in north-central Wyoming. He measured the grazing effects on leaf height, basal area, and weight per plant of Idaho fescue. His data showed no difference in these three parameters between areas receiving light grazing and those receiving moderate grazing on pastures that contained granitic soils. However, each of these parameters were greater for plants from lightly grazed pastures than for plants from moderately grazed pastures when the soils were sedimentary. Launchbaugh (1957) studied grazing of shortgrass range in Kansas and found that after 10 years of grazing, the production from lightly grazed pastures was greater than that from moderately grazed pastures. Klipple and Costello (1960) found essentially equal yields after six years of light and moderate grazing of a blue grama-buffalograss rangeland. In grazing-intensity studies conducted by Johnson (1953) in Colorado, no differences in herbage yield developed between lightly and moderately grazed pastures, but the lightly grazed pasture developed a higher proportion of desirable species than the moderately grazed pasture.

The importance of grazing management is shown by the studies of Reardon and Merrill (1976). They found that production was greater from pastures grazed at 16 animal units per section than from pastures grazed at 48 animal units per section after 20 years of yearlong grazing. However, on another area (part of the same study) where four-pasture, deferred-rotation grazing was used, production was greater than from the area grazed at 16 animal units per section. The area where grazing management was practiced was initially stocked at 32 animal units per section, and stocking was increased to 43 animal units per section 10 years after the study was initiated. Klipple and Bement (1961) surveyed the results of light grazing studies and stated that most improvement from light grazing is obtained in the first five to seven years.

After considering the information available on the effects of light grazing, it was decided that there were no reasons to predict impacts from the EORV Alternative different from those of the PA. Thus, a summary of these impacts is as follows.

Summary. Vegetation would be destroyed on 96 acres by construction of range developments and would be permanently excluded on 31 of these acres that would be occupied by these developments.

The vegetation aspect would change from sagebrush to grassland on 52,639 acres that would be treated mechanically for sagebrush control under the EORV Alternative. The mechanical treatments would kill from 70 to 95 percent of the existing sagebrush plants. Total vegetation cover would decrease from 22 percent to 16 percent and production of useable air-dry forage would increase from an average of 50 pounds per acre to between 66 and 105 pounds per acre on these areas.

On 1,360 acres the vegetation aspect would be changed from pinyon-juniper to grassland by mechanical treatments. The average total vegetation cover would decrease from 21 to 19 percent and the average production of useable air-dry forage would increase from 30 pounds per acre to between 88 and 105 pounds per acre on these areas. The mechanical treatments planned under the EORV Alternative for pinyon-juniper control would result in about 70 percent kill of the pinyon and juniper trees.

Total production on the Planning Unit would increase by about 42,830 AUMs, of which 31,807 would be from public lands. This would raise the production of useable forage on public lands from 75,410 AUMs to 107,217 AUMs. This increase is projected from an expected average increase in cover of forage-producing plants of 0.88 percent, and from the relationship between cover and production (one percent cover increase for forage-producing species results in an inrease of 30 pounds per acre of useable forage). This relationship and the expected increase in cover of forage-producing species are discussed in more detail in the analysis of the impacts of the PA on vegetation in this chapter.

As the cover of forage producing plants increased, the livestock forage range condition would improve. The time required for improvement of condition class cannot be determined with existing data and study results. However, estimates were made by BLM personnel of the livestock forage range condition class that could be realized under different levels of management for each vegetation type in each allotment. These estimates are shown in Appendix E-10. Acreages estimated for each condition class under the EORV Alternative would compare to the existing condition as follows:

	Good	Fair	Poor
Existing (Acres)	203,484	730,168	344,969
EORV (Acres)	371,721	673,719	233,181

Summary. The net effects of the EORV Alternative on vegetation would be as follows. Vegetation would be permanently lost on about 31 acres that would be occupied by range developments. Vegetation treatments would change 52,639 acres of sagebrush and 1,360 acres of pinyon-juniper to a grassland aspect. Production of useable forage would inrease about 42,830 AUMs within the Planning Unit, of which 31,807 AUMs would come from public lands. This would raise production from public lands from 75,410 AUMs to 107,217 AUMs. The amount of area in good livestock forage condition class would eventually increase from 203,484 acres to 371,721 acres, while that in fair and poor condition classes would decrease from 730,168 acres to 673,719 acres and from 344,969 acres to 233,181 acres, respectively.

Threatened or Endangered Plants. Mesa Verde cactus (Sclerocactus mesae-verdae), a threatened species, is known to occur in or near areas on which range developments are proposed. Standard operating procedures as stated in Chapter 1 will ensure that no impacts to this species will occur from proposed range developments. Neither Mesa Verde cactus nor Knowlton cactus (Pediocactus knowltonii), an endangered species, are grazed by livestock. Therefore, the only impact on these plants from livestock would be occasional damage from animals stepping on them. This occurrence would be rare because the sites where these plants grow are not frequently used by livestock due mainly to steepness and low availability of forage that attracts livestock.

Soils

Impacts on the soil resource that would result from the Proposed Action or alternatives can be categorized in two general groups: those that would affect the soil through vegetation changes and those resulting from specific actions (e.g., construction activity, areas of concentrated livestock useage). Impacts from specific actions are relatively easy to determine. Impacts that are significant to the overall condition of the soils in the Planning Unit, however, are more difficult to assess. For this reason, parameters such as sediment yield (and its relationship to vegetative change) were used to analyze impacts. The parameters and their methodologies are integral to a realistic and quantitative analysis. An explanation of the methodologies used to accomplish the assessment is in Appendix C.

Table 3-5 gives total sediment yield figures by alternative and for the existing situation. The overall sediment yield values do not reflect conditions or trends occurring on a number of individual allotments. For this reason, the allotments were separated into three categories reflecting present management levels and the amounts of vegetative cover and sediment yield predicted to occur under continuation of the existing management. Appendix F-3 lists sediment yield figures by allotment.

Proposed Action

The Proposed Action would result in a sediment yield decrease from 1,654 acre-feet per year (existing) to 1,316 acre-feet per year (a 20 percent reduction in soil loss and erosion). This would be due primarily to increases in vegetative cover and litter (Aldon, 1964). Improvements in soil structure and tilth would occur, increasing the potential productivity of the soils.

Construction of range developments would cause soil disturbance on about 96 acres; 31 acres would be lost from production. On these areas, increased soil loss would occur from wind and water erosion. Overall, these losses would not be significant.

Vegetative treatments would cause varying amounts of soil disturbance and loss on about 54,119 acres, depending on soil type, slope, and kind of treatment.

No Action Alternative

The impacts of this alternative would vary by allotment (refer to Table 3-5). Allotments showing an increase in soil loss would continue to lose soil and deteriorate. The overall impact on the Planning Unit would be a decrease of less than 1 percent in sediment yield

TABLE 3-5

SUMMARY OF SEDIMENT YIELD BY ALTERNATIVE[a/]

Allotments	Existing	PA[b/]	NA	ELG	MLFP	EORV
Existing AMPs	374.09[c/]	270.66	373.32	265.84	288.03	270.51
Improvement	270.78	230.36	264.31	227.54	233.76	230.36
No Change/Decrease [d/]	1,009.42	815.31	1,012.83	798.77	829.34	811.53
Total for Planning Unit	1,654.29	1,316.33	1,650.46	1,292.15	1,351.13	1,312.40
Average Percent Change		20	<1	22	18	21

Source: BLM Calculations, 1980.

Notes: [a/] Refer to Appendix C for methodologies used in calculating these figures, and to Appendix F-3 for specific allotment figures.

[b/] PA-Proposed Action, NA-No Action Alternative, ELG-Elimination of Livestock Grazing Alternative, MLFP-Maximization of Livestock Forage Production Alternative, EORV-Enhancement of Other Resource Values Alternative.

[c/] Decimal placing is for calculation purposes only; measurements were not made with this level of accuracy.

[d/] Based on No Action Vegetative Cover Percentage Analysis.

because 27 allotments are predicted to have an increase in vegetative cover (Appendix E-9). The decrease is not typical of all allotments under the NA Alternative (refer to Appendix F-3).

Elimination of Livestock Grazing Alternative

This alternative would provide for the greatest reduction in soil erosion (22 percent). Increases in vegetative cover and litter, and concurrent elimination of soil disturbance by livestock would allow the soils to reach their potential level of stability and productivity in the least amount of time under the ELG Alternative.

Maximization of Livestock Forage Production Alternative

The impact on soils would be greatest under this alternative. Although sediment yield would decrease from 1,654 acre-feet per year to 1,351 ac.ft./yr., intensive management practices would cause extensive soil disturbance and result in more soil loss and erosion than under the Proposed Action, the ELG Alternative, or the EORV Alternative. Sedimentation in detention dams and stock tanks would increase, shortening their effective life.

Enhancement of Other Resource Values Alternative

Impacts from the EORV Alternative would be very similar to those of the Proposed Action. Erosion caused by disturbance of soil during construction on 96 acres, loss of productivity on 31 acres of range developments, and erosion from vegetation treatments on 54,119 acres would be of about the same magnitude as under the Proposed Action. However, the 50 percent reduction in livestock use on fair and poor condition range would decrease the overall sediment yield somewhat more than under the Proposed Action. Improvements in soil condition would occur on these two types of range.

Water

Proposed Action

Estimates of future vegetative cover under the Proposed Action were used with the SCS curve number methodology (SCS, 1972) to obtain estimates of runoff (Table 3-6). Expected changes in vegetation cover (refer to Appendix E-9 for specific figures) are not great enough to change runoff from the existing situation. Changes in runoff may occur locally on 54,119 acres proposed for vegetation treatment. Simanton (et al, 1977) found that runoff increased from 0.096 inches per inch (in/in) of precipitation to 0.143 in/in for 2 years immediately following treatment. After a grass cover was established, runoff decreased to 0.019 in/in. Similar changes may occur on treated areas under the Proposed Action.

Estimates of sediment yield under the PA indicate a predicted reduction of 20 percent from the situation in the Planning Unit (Table 3-5). Reduced sedimentation would result in lower concentrations of suspended and dissolved material in surface runoff. Actual concentrations of water quality constituents cannot be predicted due to the extreme variability of soils, vegetation, geology, and convective storm events in the area, and the lack of data on ephemeral streamflow water quality.

Livestock watering would increase to 125 acre-feet under the Proposed Action, a 34-acre-foot increase from the existing situation (Table 3-7).

No Action Alternative

The NA Alternative proposes no new land treatments or stocking level adjustments; therefore, no changes in runoff, sediment yield, or water quality are foreseen (Tables 3-5 and 3-6). Present livestock watering consumes 91 acre-feet per year and is expected to continue under the NA Alternative.

Elimination of Livestock Grazing Alternative

Changes in vegetation cover predicted for this alternative (refer to Appendix E-9) would not be large enough to influence surface runoff as predicted by the SCS curve number method (Table 3-6). However, Lusby (1979) reports that elimination of grazing on small arid watersheds in western Colorado reduced runoff 20 percent in the first 13 years after livestock removal and an additional 20 percent in the next 8 years. Similar reductions in runoff may occur in the San Juan Planning Unit under the ELG Alternative.

Changes in sediment yield under the ELG Alternative would be similar to those under the Proposed Action; a reduction of approximately 20 percent is expected (Table 3-5). Water quality of surface runoff should improve as less material would be available to be suspended and dissolved in the runoff.

Total elimination of livestock grazing on public lands would eliminate the use of 91 acre-feet of water for livestock watering each year.

Maximization of Livestock Forage Production Alternative

Changes in vegetative cover predicted for this alternative (refer to Appendix E-9 for specific figures) would not significantly change estimates of runoff based on the SCS methodology (Table 3-6). Runoff may change locally on 184,477 acres proposed for vegetation treatment. In these areas runoff may increase temporarily (2 to 3 years) until a new vegetative cover is established. Once the vegetation is established, runoff should decline. The magnitude of these changes cannot be determined.

Sediment yield would be reduced about 20 percent for the MLFP Alternative (Table 3-5). Water quality should improve as a result of lower concentrations of suspended and dissolved solids; however, actual concentrations cannot be predicted.

Annual water use for livestock watering would increase 57 acre-feet (to a total of 148 acre-feet) under the MLFP Alternative (Table 3-7).

Enhancement of Other Resource Values Alternative

Changes in vegetative cover predicted for this alternative would not significantly change estimates of runoff based on the SCS curve number methodology (Table 3-6). Runoff may change locally on 54,119 acres proposed for vegetation treatment. In these areas runoff may show

TABLE 3-6

ESTIMATED RUNOFF[a/] FROM SELECTED WATERSHEDS IN CUBIC FEET PER SECOND (CFS) AND INCHES

Watershed Name (Allotment No.)	Runoff from a 10-year, 6-hour rainfall (1.4 Inches): IN CFS/INCHES					
	Existing	PA	NA	ELG	MLFP	EORV
Norton Flats (5008)	2700/0.65	2700/0.65	2700/0.65	2700/0.65	2700/0.65	2700/0.65
La Plata Trib (5017)	477/0.48	477/0.48	477/0.48	477/0.48	477/0.48	477/0.48
Sandstone Canyon (5052)	2690/0.45	2690/0.45	2690/0.45	2690/0.45	2720/0.46	2690/0.45
Carracas Mesa (5058)	344/0.51	344/0.51	344/0.51	344/0.51	344/0.51	344/0.51
Blanco Wash Trib (5077)	145/0.21	145/0.21	145/0.21	145/0.21	145/0.21	145/0.21
Laguna Seca Mesa (5105)	1290/0.56	1290/0.56	1290/0.56	1290/0.56	1290/0.56	1290/0.56
Fresno Canyon (5106)	1780/0.62	1780/0.62	1780/0.62	1780/0.62	1780/0.62	1780/0.62
Crow Mesa (5118)	3170/0.57	3200/0.57	3170/0.57	3170/0.57	3200/0.57	3200/0.57

Note: a/ Estimates based on Soil Conservation Service Curve Number Methodology (SCS,1972).

TABLE 3-7

CONSUMPTIVE WATER USE FOR LIVESTOCK WATERING[a/]

Water Use in Acre-Feet Per Year					
Existing	PA	NA	ELG	MLFP	EORV
91	125	91	0	148	58

Note: a/ Assuming a consumptive rate of 15 gallons per animal unit per day.

a temporary (2- to 3-year) increase while the new vegetation becomes established, followed by a gradual decline in runoff levels. The magnitude of runoff from treated areas cannot be determined.

Predicted sediment yields for the EORV Alternative are approximately the same as the Proposed Action and 20 percent lower than the existing situation (Table 3-5). Suspended and dissolved solids in runoff should decrease, although actual levels cannot be predicted.

Annual water use for livestock watering would decrease 33 acre-feet (to a total of 58 acre-feet) under the EORV Alternative (Table 3-7).

Air Quality

Proposed Action

Fugitive dust emissions resulting from the proposed vegetation treatments on 54,119 acres would raise the average annual concentration of total suspended particulates an estimated 2 micrograms per cubic meter at each site of treatment. The concentration of suspended particulates would be expected to drop to the background concentration within 6 miles of the treated area. The emissions would be temporary, localized, and from scattered locations. No ambient air quality standard violations would result from these emissions.

No Action Alternative

Particulate emissions and concentrations under the NA Alternative would continue as at present in the Planning Unit. This existing condition is described in Chapter 2.

Elimination of Livestock Grazing Alternative

Particulate emissions and concentrations under the ELG Alternative would continue as at present in the Planning Unit. This present situation is described in Chapter 2.

Maximization of Livestock Forage Production Alternative

The MLFP Alternative would result in dust emissions from mechanical treatment of vegetation on 211,879 acres. Average annual concentrations of total suspended particulates would be an estimated 2 micrograms per cubic meter above the background concentration at each site of vegetation treatment, but would decrease to the background concentration within 6 miles of the treated areas. No violations of ambient air quality standards would result.

Movement of herbicides from the target area as a result of drift and volatility would impact air quality by adding herbicides into the air. Concentrations would be an estimated 2 miligrams per cubic meter in the air within 10 meters (33 feet) above the sprayed surface. This concentration would decrease as the distance from the sprayed area increased and would be undetectable at a distance of 1 mile down wind from the sprayed area.

Enhancement of Other Resource Values Alternative

Fugitive dust emissions resulting from the proposed vegetation treatments on 54,119 acres would raise the average annual concentration of total suspended particulates an estimated 2 micrograms per cubic meter at each site of treatment. The concentration of suspended particulates would be expected to drop to the background concentration within 6 miles of the treated area. The emissions would be temporary, localized, and from scattered locations. No ambient air quality standard violations would result from these emissions.

Wildlife

Proposed Action

Under the PA, forage production for wildlife is expected to increase from 5,799 AUMs to 16,630 AUMs by the year 2000. More cover and space would be available to wildlife as competition between livestock and wildlife was reduced. New water sources would improve distribution of livestock and of many species of wildlife. Carrying capacities of many areas would increase and population levels would rise for many species.

Big game. Antelope. Antelope in the Planning Unit would benefit from the increased forage allocation. Of the 303,200 acres of antelope habitat, 49,240 acres have been determined by BLM specialists to be in poor condition (USDI, BLM, 1979f). Improved livestock distribution and adjustments in livestock numbers would improve habitat conditions in these areas of antelope range by reducing any potential competition for forage, cover, and space. Increases in antelope numbers would be expected to occur. Thus, under the PA, forage would be allocated for a current population of 186 antelope on public lands and a projected population of 373 head by the year 2000 (Appendix H-1).

When livestock were reduced or removed under the PA, sufficient forage would remain to support present and expected increases in antelope populations. Livestock grazing would adversely impact antelope when grazing begins before June 15, especially in identified key areas (Map 2-2). Dietary overlap would be greatest when livestock utilized forbs and grasses during the critical spring reproduction period.

As indicated by BLM fecal analysis data (USDI, BLM, 1979f), winter antelope diets overlap with sheep more than with cattle, although some overlap does occur with both. Livestock grazing after October would utilize forage, especially browse, that would otherwise be available to antelope, increasing stress and displacement of antelope in winter when vegetation productivity is low and prenatal needs high.

The proposed water developments would enhance spring-summer antelope habitat by allowing improved distribution of antelope where water is limited and would also be beneficial by encouraging more equal utilization of forage. Unless specifically designed for wildlife use, water developments would also be used by competing livestock.

Vegetation treatments are proposed on about 20,000 acres of land occupied by antelope. Impacts on antelope carrying capacity and species displacement would depend on the effectiveness

of the brush kill and the location and distribution of undisturbed lands (Appendix E-2). Chaining would alleviate habitat loss from encroachment of sagebrush and permit desirable species of forbs and grasses to reestablish themselves, which, in turn, would provide sufficient forage for the projected increases in antelope populations.

Deer. Mule deer in the Planning Unit would benefit from the proposed forage allocations. Presently deer occupy about 979,040 acres of range yearlong, of which 269,040 acres have been determined by BLM specialists to be in fair condition (USDI, BLM, 1979f). Nearly all of the 501,000 acres included in winter range have been determined to be in good condition. Allocations were based on existing population levels of 1,286 yearlong and 1,691 wintering animals, and on projected populations of 2,591 yearlong and 3,416 wintering animals by the year 2000.

Late fall livestock grazing on deer winter range can result in displacement and physiological and behavioral stress that may adversely affect the reproductive potential of the deer population. Competition for forage can also result because livestock use browse species late in the season, and deer rely heavily on browse during the critical winter period. Impacts from livestock grazing on the 710,000 acres of deer range considered to be in good condition might not be as severe as from livestock grazing on fair condition range.

The placement of water developments in previously ungrazed areas would have a significant impact on deer habitat. In some areas livestock use would increase on deer winter ranges after the construction of water developments. This might result in decreased deer carrying capacity, depending on the season of livestock use. In other areas, the reverse might occur.

Proposed vegetation treatments under the PA (Appendix E-2) would impact over 34,000 acres of deer habitat. Impacts on deer carrying capacity and species displacement would depend on the percent of brush kill and the location and distribution of undisturbed lands. Vegetation treatments, while alleviating encroachment of pinyon-juniper and sagebrush and permitting desirable species of forbs and grasses to become reestablished, would temporarily reduce shelter for deer. New areas of edge would be created and utilized by deer, but large open areas would be generally avoided.

Not all of the approximately 269,040 acres of deer habitat classified as having low vigor browse would improve nor would the overall quality of all deer habitat improve as a result of the PA, but implementation of this action should enable deer populations to attain projected levels by the year 2000.

Elk. The proposed forage allocations on public lands would benefit elk, based on the projected population of 80 by the year 2000 from the present population of 40. This population currently occupies about 88,640 acres of range, of which 8,640 acres have been determined to be in fair condition (USDI, BLM, 1979f). The vegetation inventory of elk habitat indicates that the Planning Unit is underutilized by this species at present, and elk populations in this area have the potential of doubling in the next 20 years.

Barbary sheep. Forage allocations to Barbary sheep on public lands are based on a current population of 204 animals, and a projected population of 429 sheep by the year 2000. This population occupies an area of 82,950 acres, of which 3,180 acres have been determined by BLM

specialists to be in poor condition (USDI, BLM, 1979f). Sheep would benefit from localized increased forage availability and adjustments in cattle grazing. Since an expanding population of Barbary sheep would compete mainly with mule deer for forage (especially browse), the overall impact of the Proposed Action on Barbary sheep would thus be felt from the mule deer rather than livestock. Livestock adjustments might offset some of the competition for forage between Barbary sheep and deer.

Upland game birds and non-game species. Wildlife listed under this heading are distributed throughout all of the 1,429,951 acres of land in the Planning Unit. Game bird species occupy about 510,000 acres of this total. The PA would benefit such species as chukar partridge, Merriam's turkey, mourning dove, pheasant, and quail, and other upland species through improvement in habitat conditions resulting from improved rangelands. These actions would be generally beneficial to approximately 140,000 acres of upland game bird habitat considered to be in poor to fair condition.

Many species of birds nest from mid-April to early June (USDI, BLM, 1979f). Some species would abandon their nests during egg-laying and incubation if disturbed by livestock. Reduced livestock use would enable grass, forbs, and shrubs, to be more productive and produce shelter for nests and seeds used for food. Impacts from vegetation treatments on 54,119 acres would depend on the percent of brush kill and the location and distribution of undisturbed lands. The carrying capacity would be lower and the degree of physiological and behavioral stress and species displacement would be higher following vegetative treatments. Species composition would be altered due to the vegetative changes brought about by the treatments. These impacts, however, will gradually become less apparent as new vegetation develops in treated areas.

Chaining and plowing would create new areas of edge habitat and open areas while allowing desirable species of forbs and grasses to develop. This would benefit many bird species. Subsequent seedings on some sites would benefit some species by providing increased growth of forbs and grasses.

Water developments would benefit upland species throughout the Planning Unit by increasing the distribution of birds during the summer when water availability is limited. The fencing of some springs and seeps would provide some excellent non-competitive habitat, especially when vegetative cover matured in these areas.

Riparian and wetland habitats. The riparian and wetland habitats are the smallest in the Planning Unit, together covering about 4,893 acres (USDI, BLM, 1979f). Of this amount, 1,979 acres are included in grazing allotments, and all but 10 of these acres are considered to be in poor to fair condition. The implementation of grazing systems in these areas of riparian habitat would benefit the vegetation by promoting plant vigor, growth, and reproduction. This would, in turn, preserve the integrity of localized reaches of the aquatic habitat by reducing erosion and siltation.

Fencing of riparian areas would prevent or remove grazing by livestock and certain species of wildlife. This would allow revegetation of denuded banks, improve bank stability, reduce sedimentation, and reduce fecal coliform bacterial contamination of adjacent waters. Increases of shaded waters and reduced sedimentation would enhance scattered spawning areas and result in an increased fish population in affected reaches of streams.

Aquatic habitat. The aquatic habitat of the Planning Unit, which includes 17,469 acres of lakes and reservoirs and 189 miles of streams and rivers, is generally in good overall condition (USDI, BLM, 1979f). As a whole, the PA would have an insignificant impact on the aquatic habitat and the wildlife it supports. However, riparian habitats on BLM-managed lands that are not protected or included in a grazing plan that provides for reduced livestock grazing would be adversely impacted. Vegetation required to stabilize the margins of rivers and lakes would develop slowly, if at all, and erosional processes would continue at some localities.

Vegetation treatments would have very slight impact. Chaining or plowing of existing vegetation might cause minute temporary increases of silt, with slight drift in some waterways. However, new growth would reduce the probability of soil entering waterways. Livestock would continue locally to subject lakes and water courses to fecal coliform bacterial contamination.

Threatened or endangered species. Black-footed ferret. The Planning Unit contains approximately 75,430 acres of potential black-footed ferret habitat (USDI, BLM, 1979f). About 820 acres of this land lie in areas proposed for various vegetation treatments. The ferret is associated with the prairie dog (Map 2-3) and uses its towns and burrows as shelter. Some prairie dog burrows on areas selected for vegetation treatment, may be destroyed or damaged by chaining or plowing, but the clearing of vegetation would enable this rodent to establish itself in new areas.

Bald eagle and peregrine falcon. The PA would have greater impact on the prey of these two species than on the raptors themselves. The diet of eagles in the San Juan area consists of large amounts of carrion of big game species, especially mule deer. Big game species generally would be expected to benefit as a result of the PA through improved shelter and increased available forage.

Habitats occupied by prey species of the falcon (ducks, geese, swallows, jays and bandtailed pigeons) would also be enhanced by the improvements provided by the PA. New areas of vigorous young vegetation that would furnish new sources of food and shelter for these prey species would be created.

Colorado River squawfish. The squawfish is a component of a fauna that evolved in a habitat characterized by high silt loads. Therefore, no portion of the PA would have any significant impacts on this species.

State sensitive species. These species (Appendix G-2) would be expected to increase in numbers throughout much of the Planning Unit as a result of the PA.

Summary. Populations of big game species as well as other wildlife forms would be expected to increase as a result of the PA over the long term. Antelope would be expected to increase from 186 to 373 animals; yearlong deer from 1,286 to 2,591; winter deer from 1,691 to 3,416; elk from 40 to 80; and Barbary sheep from 204 to 429. Upland game birds and non-game species would generally be expected to show increases due to improved habitat conditions and growth of localized areas of young vigorous vegetation. Threatened or endangered species would benefit through improved habitats occupied by prey species.

The small areas of riparian habitat included in the PA would improve through the implementation of grazing systems. These areas would experience an increase in numbers and varieties of wildlife along with improved quality of vegetation. Impacts on adjacent aquatic habitats would be localized and minor.

No Action Alternative

Neither the livestock licensed grazing use of 66,146 AUMs nor livestock management practices would significantly change under the NA Alternative in both the short and long terms. Forage allocations of 5,799 AUMs to wildlife would remain constant through the year 2000. Allotments that are in poor to fair condition generally would remain the same or in some areas gradually improve, and competition between livestock and wildlife for forage potentially would become more severe. Areas near water would receive the heaviest grazing pressure from both livestock and wildlife.

Competition between livestock and wildlife for forage, cover, and space would remain high in the spring. Forage producing species would be kept at low vigor in much of the area. Existing turnout dates would occur prior to range readiness in many areas and competition for forage would be intense.

Big game. Antelope. Livestock would continue to compete with antelope throughout its range, especially in areas near water. Areas where water is limited would remain in fair to good condition and provide non-competitive range to antelope. The current population would remain relatively constant at 186 animals due to limitations of cool season forbs and grasses, water, competition between livestock and other wildlife species, and unknown factors. Some improvement in the 253,960 acres of antelope range might occur, but the overall condition might remain stable or actually decline.

Deer. Competition between deer and livestock for spring and winter forage would remain at present levels throughout much of the Planning Unit. Competition would continue year-round on those areas with no periodic rest. Livestock on deer ranges would utilize available forage and preclude further deer population increases. Current range data (USDI, BLM, 1979f) indicates that deer range has the potential of supporting larger numbers, but available forage and water, livestock use, and unknown factors would keep deer populations to about 1,256 animals yearlong and 1,691 in winter. Under the NA Alternative, some deer range would decline in terms of plant vigor but most of the 979,040 acres would remain in its present condition.

Elk. Populations of elk would not be expected to fluctuate significantly beyond the current estimated 40 animals as a result of the NA Alternative, due to limitations in forage and water, competition with livestock, wild horses, and other wildlife species, and other unknown factors. Very little improvement of the 88,640 acres of elk range would be expected as a result of this alternative.

Barbary sheep. Competition between Barbary sheep and other mule deer would remain relatively constant in rough terrain, but could intensify in areas more accessible to livestock. The high birth rate and non-specialized diet of the Barbary sheep would counter competition with mule deer and would enable this species to expand from the current level of 204 sheep to an estimated count of 350 by the year 2000. The overall condition of 82,950 acres of habitat, including 3,180

acres considered to be in poor condition, would remain the same or decline in some localities as a result of the NA Alternative.

Upland game birds and non-game species. The condition of much of this habitat would remain stable. However, the wildlife of other upland areas subject to grazing would be altered in both numbers and species composition. Livestock grazing would disrupt nesting activities of many species. Others would leave an area due to declining plant cover or food sources. These species would be replaced by those having greater tolerance of livestock activities or having less dependence on vegetative cover.

Riparian and wetland habitats. Some riparian areas would be overgrazed in localized areas. Riparian vegetation would be less productive of foliage that provides shelter and forage to wildlife. Wildlife production in these areas would remain below potential and some species would be reduced in numbers or displaced entirely.

Aquatic habitat. This alternative would have some adverse impacts along scattered reaches of aquatic habitats of the Planning Unit. Present rates of fecal contamination of the aquatic habitat by livestock would continue. Erosion of stream banks would continue, contributing to existing sediment loads. In some smaller streams, pools would decrease in size and number, water temperature would increase, and spawning areas used by some fish species would be reduced or eliminated. Numbers of fish might decrease as the survival rates of juveniles declined. Habitat ratings in some areas might decline from fair to poor.

Threatened or endangered species. Impacts from the NA Alternative might adversely impact prey species of endangered species rather than the endangered species themselves. Current grazing levels would continue to deplete grasses and forbs on which many rodents and other small mammals depend. A reduction of these mammals might result in a decrease in the numbers of eagles and falcons. Similar impacts coupled with reduction of habitat quality might cause several species on the state list to decrease in numbers or disappear from presently occupied areas.

Summary. Under the NA Alternative, populations of antelope would remain static at around 186 animals; deer at 1,286 yearlong and 1,691 winter animals; elk at 40 animals by the year 2000. Barbary sheep would potentially expand from 204 to about 350 head. Upland game bird and non-game species habitats would tend to remain the same or deteriorate in localities of continued heavy livestock grazing. The overall distribution of wildlife would remain the same as present because of continued limited water sources.

Some areas of riparian habitat would be subjected to overgrazing, and these would be characterized by reduced numbers and species of wildlife. Impacts on the aquatic habitat would be localized in nature, and few changes from current conditions would be expected.

Elimination of Livestock Grazing Alternative

Forage allocations under the ELG Alternative would immediately increase from 5,799 AUMs to 74,990 AUMs in 1980 and to a total of 106,797 AUMs by the year 2000. More forage, cover, and space would be available to wildlife as competition between livestock and wildlife was eliminated. Physiological and behavioral stress would be limited to intraspecific factors among

wildlife species. Carrying capacities of much of the Planning Unit would increase (Appendix H-1), and population levels would increase for most species.

Competition for habitat would gradually increase on those areas having high vegetation production potential. Elimination of livestock competition would allow wildlife populations to increase as discussed below.

Big game. Antelope. Competition with livestock, especially sheep, for forage, cover, and space would be eliminated. Carrying capacities would increase, and antelope numbers would potentially increase from a current population of 186 to about 600 by the year 2000. Of the 303,200 acres of antelope range, the 49,240 acres currently considered to be in poor condition would be expected to improve as a result of this alternative.

Deer. Removal of livestock would benefit deer winter range; however, the overall impact of no livestock grazing could decrease carrying capacities for deer over the long term in many areas of deer range. Browse species would develop at the expense of grass and forb species that are needed to supplement the diet of the deer. Estimated increases as high as 5,500 deer yearlong and 5,900 winter would occur within 20 years over current populations of 1,286 animals yearlong and 1,691 winter. The total of 979,040 acres of deer range would be expected to remain at current condition levels.

Elk. Elk would benefit as space and forage competition by livestock was eliminated. Competition from wild horses would continue. Habitat expansion could occur from present areas in the northeastern part of the Planning Unit and allow an increase from a current population of 40 animals to an estimated 120 animals. It is not known if the population could increase to this level, but habitat and forage would be available. The 8,640 acres of elk range considered to be in fair condition within the 80,000 acres of total range would gradually improve under the NA Alternative.

Barbary sheep. With their high reproductive potential and an ample supply of forage, the Barbary sheep population potentially would expand from a current population of 204 animals to 700 animals or more after the removal of livestock. The 3,180 acres of Barbary sheep range considered to be in poor condition within the total acreage of 79,770 acres would be expected gradually to improve under this alternative.

Upland game birds and non-game species. Numerous areas would provide excellent habitat for many species of birds, and production would become high through the removal of livestock. Upland ecosystems would be more stable, and populations of various species would not fluctuate as drastically with annual weather variations and natural cycles.

Riparian and wetland habitats. The removal of livestock would enable riparian vegetation to renew vigor or become reestablished in those areas that have been subjected to overutilization. Wildlife characteristics of this habitat type might increase in both variety and in numbers as vegetative quality improved.

Aquatic habitat. The elimination of livestock would enable riparian vegetation to become reestablished in many places. This would slow or prevent stream bank erosion, and, in some places, would lower water temperatures. The elimination of livestock would reduce coliform

bacterial contamination of waters in some reaches. The diversity and numbers of fish in some waters might increase because of improved riparian vegetation and cooler water temperatures due to vegetative shelter.

Threatened or endangered species. Species listed in Appendix G-2 as threatened or endangered would be expected to increase throughout the Planning Unit as a result of improved habitat for themselves and their food source.

Summary. All big game species would experience potential population increases as a result of the ELG Alternative. Antelope would expand from 186 to about 600 head by the year 2000; deer from 1,286 yearlong and 1,691 winter animals to 5,500 yearlong and 5,900 winter animals; elk from 40 to 120; and Barbary sheep from 204 to 700. Habitat occupied by upland game birds and non-game species would generally improve in quality due to increased numbers and variety of wildlife. Both the riparian and wetland habitat and the aquatic habitat would remain the same or improve as a result of this alternative.

Maximization of Livestock Forage Production Alternative

Forage allocations to wildlife would increase from the present 5,799 AUMs to 16,630 AUMs by the year 2000. The impacts on wildlife from the MLFP Alternative would be the most severe during the first 3 to 5 years, then gradually become less severe as the year 2000 was reached. The conversion of native pinyon-juniper and sagebrush to grassland would remove some browse and shelter available to wildlife on 211,759 acres of public lands. The carrying capacity of many wildlife species on these lands would be reduced until the vegetation on the treated areas matured and would then be lower than under natural conditions. Physiological and behavioral stress accompanied by increased mortality and decreased birthrates would occur among many species of wildlife from the time the treatments were initiated until the grasslands matured and the number of livestock increased to the year 2000. Populations of some species dependent on native vegetation would be reduced or eliminated in many of these areas.

Basic impacts from grazing systems, water developments, and fencing would be the same as under the PA. Competition between livestock and wildlife for space, forage, and cover would be more intense because of heavier livestock levels throughout much of the Planning Unit. However, the increased amounts of forage would compensate for this competition.

Big game. Antelope. Scattered tracts of native sagebrush would be converted to grasslands throughout 303,200 acres of antelope range, some of which would be in key winter range. Some of the resident antelope which use these areas would be displaced to adjacent native ranges, and the added grazing pressure on browse and forb species by livestock during spring on 49,240 acres where cool season forb and grass production is already poor may result in deterioration of this vegetation as forage for antelope. The maturation of these treated grasslands would be of localized benefit to antelope, and may enable resident populations of antelope to increase their numbers from the current 186 to 373 head by the year 2000.

Deer. Some key deer winter range would be converted from pinyon-juniper and brushlands to grasslands. These areas would support wintering deer except when there is a persistent deep snow cover. The carrying capacity of key deer winter range would be increased in these areas, and sufficient winter forage in these and adjacent areas would remain to support increases from 1,286

to 2,591 yearlong and from 1,691 to 3,416 winter deer anticipated by the year 2000. Competition from livestock would continue in many areas throughout the entire 979,040 acres of deer habitat, especially during fall and winter for browse and grasses.

Elk. Impacts on elk throughout its 88,640-acre range would be similar to those described under the PA, except that the level of competition with livestock and other wildlife species for forage might be more intense in scattered areas while vegetation treatment areas matured. However, the ability of this species to move to areas with less competition or more desirable forage should enable the elk to increase its numbers from 40 to 80 by the year 2000.

Barbary sheep. Impacts to Barbary sheep in its 82,950-acre range would be about the same for the MLFP Alternative as those described under the PA. Increased competition from livestock would appear in level to gently rolling terrain. Despite increased livestock competition, the forage allocation to sheep should not significantly affect the projected population growth from 204 to 429 animals by the year 2000.

Upland game birds and non-game species. The conversion of 211,759 acres of brush and pinyon-juniper to grasslands would eliminate or reduce the quality of breeding and nesting grounds of many game birds and non-game species. Still other areas might be disturbed by increasing numbers of livestock. Stress and displacement would increase mortality and decrease birth rates of many species. Increased livestock stocking rates would result in some nest trampling and decreases in brood survival for some species of birds. In all, the quality of about 370,000 acres of good quality upland game bird habitat and the overall quality of non-game species habitat might be lowered by this proposal.

Riparian and wetland habitats. The vegetation of some areas would be subjected to increasing pressures from livestock and certain wildlife species as the year 2000 approached. Livestock and wildlife would trample some vegetation in order to reach water. Other vegetation would be consumed as food. Wildlife residents in these areas of riparian habitat would be markedly reduced in numbers or in species composition. Rest periods would permit some vegetation regrowth.

Aquatic habitat. The adverse effects upon riparian habitat would lead to adverse impacts on the aquatic habitat. The gradual deterioration of riparian habitat would contribute to increased silt loads in the streams, some higher water temperatures in certain areas, and the erosion of some stream banks. This may result in the lowering of the quality of the aquatic fauna through reduced numbers of species in certain areas and lowered numbers of individuals throughout. The expanding populations of livestock and possibly wildlife would result in increasing amounts of fecal coliform bacterial contamination.

Threatened or endangered species. The impacts of 2,4-D on wildlife species listed in Appendix G-2 are varied and not well known. The use of herbicides in some areas would pose a threat to some of these species and/or their prey through the effects of toxicity. Vegetation treatment projects would reduce food and cover upon which these species and their prey depend until adequate vegetative growth could reoccur.

Summary. Under the MLFP Alternative, wildlife would attain projected population levels similar to those under the PA by 2000. Antelope would expand from 186 to 373 animals; yearlong deer from 1,286 to 2,591 and winter deer from 1,691 to 3,416; elk from 40 to 80; and Barbary

sheep from 204 to 429. A lowering in number and variety of upland game birds and non-game wildlife species would result because of increased livestock use.

The riparian and wetland habitats would deteriorate because increased livestock use would consume foliage that would otherwise serve as food and shelter for wildlife species. The aquatic habitat would be lowered in quality in localized areas because of the deterioration of riparian vegetation and the increased presence of livestock.

Enhancement of Other Resource Values Alternative

Forage allocation to wildlife would increase from 5,799 AUMs to 32,949 AUMs in 1980 and increase to 64,756 AUMs by the year 2000. The reduction of livestock by 50 percent on those allotments containing range of poor to fair condition would stimulate the production of forbs and grasses, as well as reduce competition for food, water, cover and space for nearly all species of wildlife. This reduction of livestock grazing, coupled with rest periods on range of good condition, would result in improved winter ranges for big game.

Big game. Antelope. Competition with livestock, especially sheep, for forage and space would be reduced, along with stress and displacement. Forb and shrub production would increase and provide more forage and cover to antelope. Population levels could increase from 186 to about 540 animals by the year 2000. About 49,240 acres of the 303,200 acres of antelope range considered to be in poor condition would improve as a result of this alternative.

Deer. Impacts would be similar to those described for antelope. Deer would be expected to increase from 1,286 to 4,120 yearlong animals and from 1,691 to 5,420 winter animals by the year 2000. Improved forage, especially during fall and winter and reduced competition would contribute to these increased populations. The 269,040 acres of the 979,040 acres of deer habitat currently considered to be in fair condition would improve as a result of the EORV Alternative.

Elk. Reduction in livestock use would provide more forage for elk and would decrease stress and displacement. Carrying capacity would increase, aiding an increase in elk population from 40 to about 110 head. The 8,640 acres of the 88,640 acres of elk range considered to be in fair condition would improve as a result of this alternative.

Barbary sheep. Additional forage and reduced or absent competition from livestock would enable this species to expand its numbers from 204 to about 680 by the year 2000. The nature of its terrain would prevent much range expansion beyond present limits. Portions of the 3,180 acres of the 82,950 acres of Barbary sheep range considered to be in fair condition would improve as a result of this alternative.

Upland game birds and non-game species. Increased cover would be available, and forage availability for species dependent on vegetation for food would be expanded on about 140,000 acres of range considered to be of poor to fair condition. Fluctuations in most populations would be less dramatic because of the presence of a more stable ecosystem. Ground nesting species and other forms would benefit from decreased physical disturbance during nesting. Carrying capacity would increase, and stress and displacement would decrease. Population levels of most species would increase both in variety and numbers.

Riparian and wetland habitats. Some riparian habitat would be subject to grazing, but on a reduced scale. This would enable the vegetation of some areas to recover and produce cover, which in turn would prevent some stream bank erosion. Improved vegetative conditions would cause riparian fauna to become more numerous in species and in number.

Aquatic habitat. Aquatic habitat conditions would not be significantly different from those described under the PA. This habitat would be stable to locally improving, due to renewed or improving riparian vegetation.

Livestock would continue to pollute local areas with fecal coliform bacteria. Silt loads resulting from erosional processes would be localized and of short duration.

Threatened or endangered species. Approximately 820 acres of lands which may contain prairie dog towns, with which the black-footed ferret could be associated, might be destroyed or damaged by chaining or plowing. This impact could be offset by the opening up of new lands in which the prairie dog could become established.

The availability of big game carrion and fish, both favored foods of bald eagles, might be increased. In addition, the habitats of such falcon prey species as ducks, geese, swallows, jays, and band-tailed pigeons would be enhanced.

State sensitive species, as shown in Appendix G-2, would be expected to increase in numbers throughout the Planning Unit.

Summary. Under the EORV Alternative, big game species and other wildlife habitats would potentially gain over the present situation. Antelope populations would potentially increase from 186 to 540 animals; yearlong deer from 1,286 to 4,120 and winter deer from 1,691 to 5,420; elk from 40 to 110; and Barbary sheep from 204 to 680 by the year 2000. Upland game birds and non-game species habitats would generally improve, especially in those areas where plant vigor and shelter were in poor condition.

Riparian and wetland habitats would generally improve due to the reductions in livestock grazing. The aquatic habitat would improve in localized areas due to reductions of livestock numbers and improved riparian vegetation.

Wild Horses

Proposed Action

Under the Proposed Action, 276 AUMs would be allocated for wild horse use on the Rosa Community allotment (#5058) both in the short term and long term. This is in accordance with MFP recommendations to maintain the total existing herd at 23 head. A BLM-Forest Service cooperative agreement would be developed for joint agency protection and management of wild horses on both areas.

Livestock use on the allotment would increase from 1,150 AUMs (present licensed use) to 1,381 AUMs in the short term and 1,500 AUMs in the long term. Competition for forage with livestock and wildlife, primarily the cool-season species seeded in the Laguna Seca Draw area,

would continue. Forage competition would be relieved in the short and long terms by the proposed chaining and seeding of 1,200 acres in the Rosa Allotment. (Refer to Appendix E-2.)

There is no lack of water in either wild horse area due to the proximity of Navajo Lake. The proposed development of a well in the Laguna Seca Draw area would be an additional benefit to horses in that area. (Refer to Appendix H-3.)

No Action Alternative

Under the NA Alternative, no AUMs would be allocated for wild horse use and no cooperative agreements for protection would be initiated. However, habitat would be provided as required by the Wild and Free-Roaming Horse and Burro Act (16 U.S.C. 1331) of December 15, 1971. Horse use of the area would probably continue as it is at present, and herd production and condition would probably continue as presently exists. Wild horse numbers would be maintained at 23 head, and period of use would remain as it is at present.

Elimination of Livestock Grazing Alternative

Under the ELG Alternative, 420 AUMs would be allocated for wild horse use in both the long and short terms. As all domestic livestock would be removed from public lands, competition for forage by wild horses and livestock would be eliminated. Existing forage competition between wild horses and wildlife would continue and possibly increase as wildlife populations increased. Wild horse numbers in excess of 35 head would be removed as per MFP recommendations.

Maximization of Livestock Forage Production Alternative

Under the MLFP Alternative, 276 AUMs would be allocated to wild horses in both the short and long terms. Wild horse numbers would be maintained at the 23 head level in accordance with MFP recommendations. The BLM-Forest Service cooperative agreement for wild horse protection and management would also be implemented under this alternative.

As under the Proposed Action, livestock use on the Rosa Allotment would increase from 1,150 AUMs (present licensed use) to 1,381 AUMs in the short term and 1,500 AUMs in the long term. Livestock period of use would continue as presently exists.

Competition for forage with livestock and wildlife would remain the same. Under the MLFP Alternative, no additional range improvements other than those mentioned in the Proposed Action, are proposed for the wild horse area.

Enhancement of Other Resource Values Alternative

Under the EORV Alternative, wild horses would be allocated 420 AUMs both in the short and long terms. Wild horses in excess of 35 head would be removed. The BLM-Forest Service cooperative agreement for wild horse protection and management would be implemented.

Livestock use of the area would be reduced from 1,150 AUMs (present licensed use) to 618 AUMs in both the short and long terms. Period of use by livestock would continue as presently exists.

Competition for forage by wild horses and livestock would be reduced. Forage competition between wild horses and wildlife would possibly increase on browse species as wildlife populations increased.

Livestock Grazing

Proposed Action

Under the Proposed Action, livestock grazing on public lands would be eliminated from two allotments (Nos. 5013 and 5057). Total allotment numbers in the Planning Unit would be reduced from 138 to 136, and total operator numbers would be reduced from 185 to 183. Net livestock AUMs would be reduced from the existing preference of 108,371 AUMs to 69,335 AUMs in the short term and 90,311 AUMs in the long term. This would be a reduction of 39,036 AUMs and 18,060 AUMs in the short and long terms respectively.

Net livestock AUMs would increase from the average licensed use of 66,146 AUMs to 69,335 AUMs in the short term and 90,311 AUMs in the long term. This would be an increase of 3,189 AUMs in the short term and 24,165 AUMs in the long term. Refer to Table 3-8 for livestock AUM adjustments from existing preference and average licensed use.

The proposed grazing rest periods (April 1 to May 31 and July 15 to September 15) would primarily affect those ranch operators with yearlong or spring-summer use periods. Status of those allotments affected by the Proposed Action rest period would be as follows: allotments not affected by the proposed rest period, 22 (includes all existing AMPs); allotments requiring modification of spring rest period only, 49; allotments requiring modification of summer use only, 2; and allotments requiring modifications in both spring and summer use, 63. Refer to Appendix E-8 for more detailed allotment rest period data.

As mentioned in Chapter 1 (Proposed Action section) implementation of the proposed rest periods would require that each pasture within an allotment be rested 1 spring out of every 3 years and one summer out of every 3 years. Numerous combinations would be available to accomplish the proposed rest period requirement. During these required rest periods, livestock would either be removed from the public land allotment to private or other leased lands, or would be concentrated in other pastures of the allotment not being rested. State lands within the Planning Unit would also be involved in the rest period treatments.

Due to the minimal number of livestock moves required to implement the proposed rest period, impacts to livestock production, existing breeding programs, and livestock management practices are expected to be minimal under the Proposed Action. Problems associated with livestock adjustments, and alternatives to meet the proposed rest period requirements, would be resolved on an allotment-by-allotment basis through the Rangeland Consultation Policy (Section 8 PL-95-514). (Refer to Appendix B for policy details.) Ranch operators, working in cooperation with BLM and other agencies involved in their allotment, would be involved in initiating the proposed rest periods. Ranch operator individualism, flexibility, and overall ranch operation and coordination would be improved. Refer to Appendices H-1, H-5, H-6 and H-7 for detailed allotment statistics.

TABLE 3-8

ADJUSTMENTS IN LIVESTOCK AUMs, PROPOSED ACTION[a/]

	From Preference				From Average Licensed Use			
	Short Term		Long Term		Short Term		Long Term	
AMPs								
Increases			209	(2)	822	(5)	4,001	(10)
Reductions	8,780[b/]	(13)[c/]	4,292	(7)	2,400	(10)	882	(5)
Eliminated								
No. allotments with no change		2		6				
Non AMPs								
Increases	1,822	(26)	2,751	(29)	12,008	(69)	23,443	(96)
Reductions	31,812	(95)	16,462	(50)	7,100	(51)	2,256	(25)
Eliminated	266	(2)	266	(2)	141	(2)	141	(2)
No. allotments with no change				42		1		
Total								
Increases	1,822	(26)	2,960	(31)	12,830	(74)	27,444	(106)
Reductions	40,592	(108)	20,754	(57)	9,500	(61)	3,138	(30)
Eliminated	266	(2)	266	(2)	141	(2)	141	(2)
No. allotments with no change		2		48		1		

Source: BLM Planning Documents, 1979.

Notes: a/ Refer to Appendices H-6 and H-7 for individual allotment AUM adjustments, and to Appendices H-8 and H-9 for a summary of livestock AUM adjustments by alternative.

b/ AUM change.

c/ Number of allotments involved.

Summary. Under the Proposed Action, allotment numbers would be reduced from 138 to 136;ranch operator numbers would be reduced from 185 to 183. Net livestock AUMs (from average licensed use) would increase 3,189 AUMs in the short term, and 24,165 AUMs in the long term. Net livestock AUMs (from existing preference) would decrease by 39,036 AUMs in the short term and 18,060 AUMs in the long term.

No allotments would be combined and no change in class of livestock is proposed. Each pasture within an allotment would receive a spring (4/1 to 5/31) and summer (7/15 to 9/15) rest period 1 out of 3 years. Some modifications of existing period of use would be made on 114 allotments. Due to the minimum number of livestock moves required, impacts to livestock production, breeding programs, and management practices would be minimal.

No Action Alternative

Under the NA Alternative, no allotments would be eliminated, and livestock operator and allotment numbers would remain unchanged from the existing situation. Net livestock AUMs would be reduced from the existing preference of 108,371 AUMs to 66,146 AUMs in the short and long terms. This would be a reduction of 42,225 in both the short and long terms.

The 15 existing AMP allotments would continue to be intensively managed, while the remaining 123 non-AMP allotments would be managed as they are at present. No new grazing management systems would be developed, and the spring-summer rest period would not be implemented. Existing livestock breeding programs and management practices would be unaffected and would continue as at present. Refer to Table 3-9 for a summary of livestock AUM adjustments from preference and average licensed use.

Elimination of Livestock Grazing Alternative

Under the ELG Alternative, all livestock would be removed from public lands within the Planning Unit. No grazing permits would be issued. The majority of ranchers in the area presently depend heavily on public (BLM and Forest Service) lands to continue their livestock business. A majority of ranch operators also either own or lease other (private or state) lands not associated with their allotment. It is unknown if these other lands would be adequate to maintain their existing herds yearlong under the ELG Alternative.

The loss of BLM grazing privileges would cause many ranchers to buy or lease other private or state grazing lands (to maintain their forest permits), or sell portions or all of their herds. Several ranchers would ultimately be forced out of the livestock business. The loss of AUMs would be an area-wide, long-term impact. (Refer to the Social and Economic Conditions section of this chapter for further discussion of this impact.)

Maximization of Livestock Forage Production Alternative

General impacts on allotments, ranchers, and existing livestock operations (i.e., allotment numbers and combinations, operator numbers, management practices, proposed grazing rest periods, and flexibility) under the MLFP Alternative would be the same as under the Proposed Action. Net livestock AUMs would be reduced from the exisitng preference of 108,371 AUMs to 69,335 AUMs in the short term and 106,748 AUMs in the long term. This would be a reduction of 39,036 AUMs and 1,623 AUMs in the short and long terms respectively.

TABLE 3-9

ADJUSTMENTS IN LIVESTOCK AUMs, NO ACTION ALTERNATIVE[a/]

	From Preference				From Average Licensed Use	
	Short Term		Long Term		Short Term	Long Term
AMPs						
Increases					No Change	No Change
Reductions	7,202[b/]	(15)[c/]	7,202	(15)		
Eliminated						
No. allotments with no change					15	15
Non AMPs						
Increases	454	(7)	454	(7)	No Change	No Change
Reductions	35,477	(116)	35,477	(116)		
Eliminated						
No. allotments with no change					123	123
Total						
Increases	454	(7)	454	(7)	No Change	No Change
Reductions	42,679	(131)	42,679	(131)		
Eliminated						
No. allotments with no change					138	138

Source: BLM Planning Documents, 1979.

Notes: a/ Refer to Appendices H-6 and H-7 for individual allotment AUM adjustments, and to Appendices H-8 and H-9 for a summary of livestock AUM adjustments by alternative.

b/ AUM Change.

c/ Number of allotments involved.

TABLE 3-10

ADJUSTMENTS IN LIVESTOCK AUMs,
MAXIMIZATION OF LIVESTOCK FORAGE PRODUCTION ALTERNATIVE[a/]

	From Preference				From Average Licensed Use			
	Short Term		Long Term		Short Term		Long Term	
AMPs								
Increases			5,515[b/]	(8)[c/]	822	(5)	10,204	(11)
Reductions	8,780	(13)	3,013	(6)	2,400	(10)	500	(4)
Eliminated								
No. allotments with no change		2		1				
Non AMPs								
Increases	1,822	(26)	8,251	(59)	12,008	(69)	32,821	(102)
Reductions	31,812	(95)	11,963	(46)	7,100	(51)	1,635	(19)
Eliminated	266	(2)	266	(2)	141	(2)	141	(2)
No. allotments with no change				16		1		
Total								
Increases	1,822	(26)	13,766	(67)	12,830	(74)	43,025	(113)
Reductions	40,592	(108)	14,976	(52)	9,500	(61)	2,135	(23)
Eliminated	266	(2)	266	(2)	141	(2)	141	(2)
No. allotments with no change		2		17		1		

Source: BLM Planning Documents, 1979.

Notes: a/ Refer to Appendices H-6 and H-7 for individual allotment AUM adjustments, and to Appendices H-8 and H-9 for a summary of livestock AUM adjustments by alternative.

b/ AUM change.

c/ Number of allotments involved.

TABLE 3-11

ADJUSTMENTS IN LIVESTOCK AUMs,
ENHANCEMENT OF OTHER RESOURCE VALUES ALTERNATIVE[a/]

	From Preference			From Average Licensed Use		
	Short-Term		Long-Term	Short-Term		Long-Term
AMPs						
Increases			Same as			Same as
Reductions	14,768[b/]	(15)[c/]	Short Term	7,566	(15)	Short Term
Eliminated						
No. allotments with no change						
Non AMPs						
Increases	212	(5)	Same as	3,767	(37)	Same as
Reductions	51,508	(116)	Short Term	20,165	(84)	Short Term
Eliminated	266	(2)		141	(2)	
No. allotments with no change						
Total						
Increases	212	(5)	Same as	3,767	(37)	Same as
Reductions	66,276	(131)	Short Term	27,737	(99)	Short Term
Eliminated	266	(2)		141	(2)	
No. allotments with no change						

Source: BLM Planning Documents, 1979.

Notes: a/ Refer to Appendices H-6 and H-7 for individual allotment AUM adjustments, and to Appendices H-8 and H-9 for a summary of livestock AUM adjustments by alternative.

b/ AUM change.

c/ Number of allotments involved.

Net livestock AUMs would increase from the average licensed use of 66,146 AUMs to 69,335 AUMs in the short term and 106,748 AUMs in the long term. This would be an increase of 3,189 AUMs in the short term and 40,602 AUMs in the long term. Refer to Table 3-10 for livestock AUM adjustments from existing preference and average licensed use.

Enhancement of Other Resource Values Alternative

General impacts on allotments, operators, and existing livestock operations (i.e., allotment numbers, and combinations, operator numbers, management practices, proposed grazing rest periods, and flexibility) under the EORV Alternative would be the same as under the Proposed Action. Net livestock AUMs would be reduced from the existing preference of 108,371 AUMs to 42,041 AUMs in the short and long terms. This would be a reduction of 66,330 AUMs in both the short and long terms.

Net livestock AUMs would also be reduced from the average licensed use of 66,146 AUMs to 42,041 AUMs in the short and long terms. This would be a reduction of 24,105 AUMs. Refer to Table 3-11 for livestock AUM adjustments from existing preference and average licensed use.

Forestry

Proposed Action

Timber. The total timbered resource on public lands amounts to 3,025 acres within this Planning Unit. All of this timbered land is classified as non-productive except for 175 acres. The Proposed Action would not result in any major impacts to these timber resources.

Woodlands. The total commercial woodland base is estimated to be 226,577 acres, with a standing volume of 1,332,800 cords. Under the Proposed Action, 1,360 acres of land classified as pinyon-juniper (P-J) would be chained. This operation would not have any impact on the woodland resource base of the Planning Unit as the area has been previously chained.

No Action Alternative

Timber. Under this alternative, the impacts on timber would be essentially the same as those that exist presently.

Woodlands. The woodlands base would not be reduced by grazing, and there should be an improvement over the long term in this resource, as far as standing volume is concerned. No chaining would be imposed to reduce the woodland base under the NA Alternative.

Elimination of Livestock Grazing Alternative

Timber. Under this alternative there would be an increase in the understory vegetation, which would increase competition with timber reproduction, (ponderosa pine seedlings) because of the growth of grasses and forbs. This would also increase fire potential and could eliminate existing stands as a result of the ladder effect caused by pinyon-juniper encroachment.

Woodlands. The woodland resource would show an improvement in standing volume under the ELG Alternative. Because pinyon pine needs shade to increase reproduction, the increase in brush would improve reproduction of this woodland type.

Maximization of Livestock Forage Production Alternative

Timber. This alternative would not result in any major impacts to the timber resource.

Woodlands. Under the MLFP Alternative, 106,889 acres of pinyon-juniper woodlands would be chained, reducing the producing woodland resource base of the San Juan Planning Unit by an estimated 21.4 percent. This loss in production would amount to approximately 2,672 cords of wood yearly, reducing the yearly sustained yield cut from 6,664 cords to approximately 4,000 cords. This estimate is based on a 200-year rotation and an average stocking level estimated to be a standing volume of five cords per acre. The reduction would have an adverse impact on the capability of the Planning Unit to meet the increasing demand for those wood products. It is believed the sustained yield capability of the Planning Unit is now being exceeded. The loss of standing volume of wood fiber located on the chained areas is estimated to be 534,445 cords.

Enhancement of Other Resource Values Alternative

Timber. This alternative would result in an improvement in the quality of the timber resource as a result of an expected increase in timber reproduction.

Woodlands. Reproduction of the woodland resource could show improvement where grazing is excluded. However, standing volume would show little if any improvement in the long term.

Recreation

Proposed Action

Under the Proposed Action, the placement of numerous range developments and vegetation treatments may influence the quality of an individual's recreation experience. These influences would be primarily associated with dispersed recreation activities, since no impacts are expected to occur on any developed recreation site or to activities occurring within the site as a result of the Proposed Action.

It is assumed that concentrations of livestock, livestock trampling, accumulation of livestock feces, encroaching range structures, and impeded access as a result of fencing would make recreation use areas less desirable. It is assumed that recreationists traditionally using a specific area for their recreation activities would most likely move to another site within the region if the quality of the recreation experience at their favorite area was reduced. Actual use by livestock in the Planning Unit would increase by 3,189 AUMs in the short term and by 24,165 AUMS in the long term. However, approximately 54 percent of the Planning Unit would be affected by spring and summer rest periods one out of three years, which would coincide with a portion of the heavy recreation use period. The 96 acres disturbed by the construction of range and wildlife developments, along with 54,119 acres of vegetation treatment, would impact about 5 percent of the public lands available for dispersed recreation activities. However, the acreage undergoing vegetation treatment would be available for recreation use after temporary disruption during treatments.

Hunting use is expected to increase over long-term projections of 75,773 visitor-days because of the proposed vegetation allocation to wildlife and projected increases in big game populations under the PA. (The additional 19,458 visitor-days above the long-term projection for big game hunting results from multiplying the projected big game species population increases by the hunter days per animal (refer to Table 3-16). These increases in wildlife populations are expected to improve the quality of the hunting experience and viewing opportunities.

Summary. Disruption and displacement of recreation activities and resources as a result of new range developments, vegetation treatments, and increased livestock use would be minimal. Visitor-day use is expected to increase under the PA by 19,458 visitor-days as a result of increased big game hunting use. No impacts are expected to occur to the five areas (totaling 12,595 acres) that were identified in the recreation program according to management guidelines to be studied for ACEC designation.

No Action Alternative

There would be no discernible impacts to the recreation resource or long-term recreation use demands as a result of the NA Alternative. Recreation activities and their values would essentially remain the same as described in Chapter 2. There should be no distinguishable difference from the total projected visitor-days of 919,378 for the year 2000. As a result of the standard operating procedures listed in Chapter 1, no impact would occur to the five areas recommended to be studied for ACEC designation.

Elimination of Livestock Grazing Alternative

Impacts to the recreation resource are expected as a result of the removal of range developments that are no longer useful and the elimination of livestock grazing under the ELG Alternative. This alternative would also prevent construction of new facilities on public lands and eliminate conflicts between recreationist and livestock. The quality of the recreation experience would improve for those who previously experienced conflicts with livestock. Hunter satisfaction and increased recreational viewing opportunities are expected as a result of increased big game populations. There is expected to be an increase of 88,631 visitor-days over the long-term projection of 919,378 recreation visitor-days as a result of increased hunting use (see Table 3-16). No impact would occur to the five areas recommended to be studied for ACEC designation.

Maximization of Livestock Forage Production Alternative

Sources of impact to the recreation resource would be from increased AUMs, additional range structures, and 237,464 acres of vegetation treatment. These sources, even though they would be dispersed throughout the Planning Unit, would have some influence on the quality of the recreation experience for some users. The primary influence would be through the change in the vegetative characteristics of the open space as a result of vegetation treatments. Recreation use is expected to increase by 2 percent from the projected demand of 919,378 visitor-days for the year 2000. This increase would be the result of an increase of 19,458 visitor-days above the projected long-term demand because of increase in big game populations under the MLFP Alternative. No impact to the 12,595 acres within the five areas recommended to be studied for ACEC designation would occur under this alternative.

Enhancement of Other Resource Values Alternative

Under the EORV Alternative, disruption of recreation activities or the displacement of the dispersed type of recreation activities occurring in the Planning Unit, would be minimal. Less than 5 percent of the public lands available for recreation use outside the recreation management area would be affected by the developments and treatments. Improved hunting opportunities as a result of increased big game populations under the EORV Alternative would generate 75,296 additional visitor-days from hunting beyond the projected demand of 919,378 visitor-days. An improvement in the aesthetic quality of the area would result from improvement of fair and poor condition ranges. No impacts to the five areas recommended to be studied for ACEC designation would occur under this alternative, as a result of the standard operating procedures described in Chapter 1.

Wilderness

Proposed Action

Application of standard operating procedures for wilderness as presented in Chapter 1 would prevent any adverse impacts on the lands under wilderness review. Because of these procedures no impairment to wilderness suitability would occur. Should an inventory unit be designated as a Wilderness Study Area (WSA), Section 603c of FLPMA and BLM's Interim Management Policy for lands under wilderness review provide for special exceptions from nonimpairment for grazing uses as discussed in Chapter 2 (Wilderness section) and a continuation of grazing uses as qualified under the Interim Management Policy. If one or both units are dropped from further wilderness consideration (as has been recommended), management limitations imposed by BLM's Interim Management Policy for lands under wilderness review would no longer apply.

No Action Alternative

The No Action Alternative involves no new activity on those public lands being evaluated for suitability as wilderness. Should one or both units be designated as a WSA "grandfathered" grazing use would be allowed to continue in the same manner and degree that existed on October 21, 1976, as addressed in BLM's Interim Management Policy for lands under wilderness review.

Elimination of Livestock Grazing Alternative

Under the ELG Alternative, no adverse impacts would occur to impair the wilderness suitability of public lands under review for wilderness designation. New actions proposed would comply with the standard operating procedures for wilderness presented in Chapter 1.

Maximization of Livestock Forage Production Alternative

Application of the standard operating procedures presented for wilderness in Chapter 1 would prevent any adverse impacts on the lands under wilderness review; no impairment to wilderness suitability would occur. Should an inventory unit be designated as a WSA, Section 603c of FLPMA and the BLM's Interim Management Policy for lands under wilderness review would

apply. These documents provide for special exception from nonimpairment for grazing uses as discussed in Chapter 2 (Wilderness section). If one or both units are dropped from further wilderness consideration, as has been recommended, management limitations imposed by BLM's Interim Management Policy for lands under wilderness review would no longer apply.

Enhancement of Other Resource Values Alternative

Application of the standard operating procedures for wilderness listed in Chapter 1 would prevent any adverse impacts on the lands under wilderness review, and no impairment to wilderness suitability would occur. Should an inventory unit be designated as a WSA, Section 603c of FLPMA and the BLM's Interim Management Policy for lands under wilderness review would apply. These documents provide for special exception from nonimpairment for grazing uses as discussed in Chapter 2 (Wilderness section). If one or both units are dropped from further wilderness consideration, as has been recommended, management limitations imposed by BLM's Interim Management Policy for lands under wilderness review would no longer apply.

Other Land Uses

None of the alternatives being considered would result in any significant land use changes within the part of the Planning Unit that is outside of the grazing allotments, nor would they conflict with any existing Federal, State, or local land use plans, controls, or constraints. Discussion relating to the probable impacts of the various alternatives on the land that is within the allotments follows.

Proposed Action

Under the Proposed Action, general changes in land use would occur only within allotments 5013, 5057, 5066, and 5079. Livestock grazing would be eliminated from the public land within allotments 5013 and 5057 (about 67 percent of the first is public land, and about 62 percent of the second). Use of the area for recreation activities and other purposes (mentioned in Chapter 2 as concurrent uses) would then be predominant.

The opposite change would occur within allotments 5066 and 5079. During the last six years, grazing permits have not been issued for the public land within these allotments (which includes about two thirds of the area of each), but is to commence under the Proposed Action.

The areas indicated only make up a small portion of the land within the Planning Unit. The overall impact on land use within the total Planning Unit would be insignificant.

No Action Alternative

No changes in land use within the grazing allotment would occur under this alternative.

Elimination of Livestock Grazing Alternative

This alternative would change the use of the BLM-administered land within the allotment boundaries from grazing to outdoor recreation activities and other uses (described in Chapter 2).

Maximization of Livestock Forage Production Alternative

Although intensity of livestock grazing would increase, basic changes in land use would come about only within allotments 5013, 5057, 5066 and 5079 under this alternative. These changes would be insignificant on the total land use of the Planning Unit.

Enhancement of Other Resource Values Alternative

Intensity of livestock grazing would decrease if this alternative is implemented, but changes in land use would occur only in Allotment 5013, 5057, 5066, and 5079. Changes within those allotments and the significance of these changes would be similar to those which would result from the Proposed Action.

Cultural Resources

Proposed Action

New data on the cultural resource base would be added from Class III inventories conducted for archeological clearance on 54,119 acres of vegetation treatments and approximately 96 acres disturbed during construction of range development projects.

Vegetation treatments would have a variety of impacts. U.S. Forest Service data indicate a 50-percent random disturbance of surface cultural resources during chaining, a rate eliminating the scientific value of remaining data (DeBloois, Green, and Wylie, 1975). The scientific value of surface cultural resources also is eliminated by plowing. Therefore, any surface sites mitigated by survey and recordation and chained or plowed would be unavailable for future study. The potential for additional scientific knowledge resulting from future advances in archeological techniques also would be eliminated from any sites mitigated by excavation. Seeding operations could produce site damage. Temporary local increases in surface runoff from disturbed areas could cause increased site erosion until the vegetation cover was re-established. A potential increase in unauthorized collection and vandalism could occur from identification of cultural resource sites left undisturbed in areas of vegetation treatments.

Unprotected cultural resources *in situ* may be threatened by any type of visitation. Visitor-days for a variety of recreation activities in the Planning Unit (Appendix J) have been estimated to increase as a result of projected population growth in the area. Under the PA, an additional increase of 19,458 visitor-days for big-game hunting has been estimated to accompany a rise in big-game species by the year 2000. The likelihood of encountering cultural resources while searching for game would increase the potential for unauthorized collection and vandalism. The potential for damage to cultural resources from rubbing, leaning, and trampling by livestock would also rise as a result of an increase of 24,165 AUMs above the present rate by the year 2000.

In summary, the impacts of the PA would be two-fold: (1) an increase in the data base resulting from Class III inventories of 54,215 acres, and (2) an increase in the potential for resource loss.

No Action Alternative

Damage from erosion and rubbing, leaning, and trampling by livestock would continue at the present rate. Unauthorized collection and vandalism would not be increased by this alternative. The NA Alternative would affect neither the existing data base nor the rate of resource loss.

Elimination of Livestock Grazing Alternative

Class III inventories conducted prior to issuance of trailing permits to reach Forest Service lands would add to knowledge of the cultural resource base on lands managed by the BLM. Potential damage from rubbing, leaning, and trampling by cattle would be eliminated.

Damage to cultural resources from erosion would continue at the present rate. An additional increase of 19,458 visitor-days from big-game hunting by the year 2000 could accompany the rise in big-game species, thereby increasing the potential for unauthorized collection and vandalism.

Maximization of Livestock Forage Production Alternative

New data on the cultural resource base would be added from Class III inventories on 211,879 acres of mechanical vegetation treatments and approximately 96 acres of range developments. The spraying of an additional 25,705 acres of sagebrush would not cause surface disturbance of cultural resources. Potential impacts from spraying on the dating of cultural resources would be mitigated by standard operating procedures.

Any surface sites surveyed and recorded prior to chaining and plowing would be unavailable for future study. The potential for additional scientific knowledge resulting from future technical advances in the profession would be eliminated from excavated sites. Seeding operations could produce site damage. Temporary local increases in surface runoff from disturbed areas could cause increased erosion damage to cultural resources until the vegetation cover was re-established. Potential increases in vandalism could occur from identification of sites left undisturbed in areas of vegetation treatments.

The additional 88,631 hunter visitor-days estimated to accompany the rise in big game species by the year 2000 would increase the potential for unauthorized collection and vandalism. By the year 2000, potential damage from rubbing, leaning, and trampling of livestock would be increased by the allocation of 40,602 AUMs above the present rate.

In summary, the primary impacts from the MLFP Alternative are predicted to be an increase in the data base from Class III inventories of 211,975 acres, and an increase in the rate of resource loss resulting from the varied effects of mechanical vegetation treatments and the estimated increase of 88,631 hunter visitor-days.

Enhancement of Other Resouce Values Alternative

Class III inventories would add to the cultural resource data base on 54,119 acres subjected to vegetation treatments and approximately 96 acres of range developments. Any surface

sites mitigated by survey and recordation prior to chaining and plowing would be unavailable for future study, and potential new knowledge resulting from future advances in archaeological techniques would be eliminated from sites mitigated by excavation. Site damage could result from seeding operations, from temporary increases in surface runoff from disturbed areas, and from unauthorized collection and vandalism associated with increased site visibility.

The addition of 75,296 hunter visitor-days estimated to accompany the rise in big game species by the year 2000 would increase the potential for unauthorized collection and vandalism. Potential damage from rubbing, leaning, and trampling by livestock would be reduced by 24,105 AUMs from the present rate.

Visual Resources

Proposed Action

Under the PA, structures and disturbances from the proposed range developments and vegetation treatments would cause visual contrasts in the landscape. The exact amount of visual impact from range developments on 31 acres and vegetation treatments on 54,119 acres would be determined from a site-specific EA before the implementation of new grazing management systems. However, with the implementation of the standard operating procedures, visual contrasts are expected to be minimized to a degree that would be compatible with the management objective for the VRM class of the area in which the contrasts would occur. No change in VRM classes would occur.

No Action Alternative

The NA Alternative contains no new components which would impact visual resources or reduce any management classes. There would be no introduction into the landscape of undesirable or inharmonious influences from new grazing management systems or supporting range structures.

Elimination of Livestock Grazing Alternative

Under the ELG Alternative, no impacts to visual resources are anticipated as a result of the elimination of livestock grazing on 926,909 acres of public land. No new range developments would be constructed and no vegetation treatments would occur. Range developments which serve no useful purpose would be removed from public land.

Maximization of Livestock Forage Production Alternative

Under the MLFP Alternative, contrasts to the existing visual resources would occur from construction of range developments and vegetation treatments. As identified in this alternative, 237,464 acres of sagebrush and pinyon-juniper would be converted to grassland. Assuming that the treated areas would occur in both VRM Class III and IV areas, approximately 17 percent of the total of both classes would be modified visually. The contrasts created by these treatments would become less evident over time as ground cover became established and the reinvasion of vegetative types which existed in the area prior to treatment occurs. Range and wildlife developments would also be introduced into the landscape. These developments would account for approximately 31 total acres of modifications to the landscape over the long term. These visual

modifications are expected to be minimized to the degree that any contrast would be compatible with the management objective for the VRM Class of the area in which it would occur.

Enhancement of Other Resource Values Alternative

Structures and disturbance from proposed range and wildlife developments and vegetation treatments would be the source of the visual resource impacts. Approximately 31 acres would be impacted over the long term by these developments. This acreage would be scattered over the 1,358,453 acres of VRM Class III and IV lands. The vegetation treatment of 54,119 acres would also be scattered throughout the Class III and IV lands. The reduction of grazing use on fair and poor condition ranges as proposed would have an effect upon the visual resources through improved plant vigor and ground cover. No reduction in visual resource management classes is expected under the EORV Alternative.

Social and Economic Conditions

Proposed Action

Because the Proposed Action would be undertaken over a period of years in order to meet the objectives described in Chapter 1, it is important to distinguish three time periods during which direct and indirect impacts on social and economic conditions would occur. For the purposes of this socioeconomic analysis, the "short term" would constitute the period in which initial adjustments in permitted levels of grazing on public lands would be made; this period would fall in the early 1980's. Subsequently, as vegetation treatments, grazing management implementation, and range developments were accomplished, forage production and grazing levels would rise. This period would occupy most of the 1980's and 1990's, and is labelled the "program interval". In the "long term", range conditions would have improved to the point of satisfying present objectives. This point would fall about the year 2000, although specific objectives might be met earlier.

In the following assessment of direct and indirect impacts, short-term and long-term conditions are outlined in detail. During the program interval, short-term conditions would be altered in progressive stages until they approximate long-term conditions. The annual rate of this change is unknown, but, for the purposes of this assessment, it has been assumed that this rate would be constant.

Overall, it is important to distinguish between short-term benefits and costs, and those which would occur in the long term. During the short term, the costs are in many cases substantial, such as those resulting from the initial cuts in permitted livestock grazing for some ranchers. However, over the long term, the Proposed Action would significantly benefit ranchers, their communities, and other users of public lands through such actions as improved erosion control and expanded wildlife habitat, as well as increased grazing levels.

The analysis which follows details social and economic impacts on the ranching population of the San Juan Basin, the group that would be most directly affected by the Proposed Action. But a larger population would be affected in the short and long terms, by improved resource management by the BLM. Although much of the economic and social value of this improvement cannot be quantified, the Proposed Action would improve the quality of life of

inhabitants of the region generally and contribute to the social well-being of the regional population and of other users and potential users of public land in the nation (refer to Tables 3-16 and 3-17).

Impacts on Demographics of the Socioeconomic Study Region. In the 1980's and 90's, the population of the San Juan Basin is predicted to grow substantially, and implementation of the Proposed Action or any of the alternatives would not change the overall rate of this growth. Within the three-county area, the ranching population is too small in relative size to affect the size of the general population. Moreover, despite the economic impacts of the Proposed Action no significant in- or out-migration of residents, nor changes in rates of natural increase in the region, are expected to be associated with predicted short- and long-term changes in ranch production, employment, and income.

In isolated rural areas, unincorporated settlements and crossroads communities may experience small changes in population levels because businesses and services catering to ranchers and their families would experience short-term reductions in sales. Revitalization of the ranching economy during the program interval would build sales back up to 1978 levels by the early 1990's, and would promote some localized long-term business expansion and population growth. In particular, projected expansion of ranching activity and investment among Indian operators would lead to accelerated population growth in the vicinity of Counselor, Lybrook, and Nageezi. In these areas, relatively large Navajo communities already support several trading posts and other enterprises, whereas in other parts of the three-county area, residents of predominantly non-Indian rural communities tend to do almost all their business by driving to the nearest city or town. However, throughout the region, any impacts on population as a result of the Proposed Action would be slight, and would be indistinguishable from the much more significant effect of regional energy resource development.

Impacts on the Ranching Population. The ranching population was estimated at 1,070 in 1978. Under the Proposed Action, this total would increase slightly in both the short- and the long-terms. This growth would be due to: (1) a net gain in the total number of ranches using allotments in the Planning Unit as a result of initiation of grazing on allotments not being grazed in 1978; and (2) a net increase in the total number of ranches in the medium and large commercial-size categories, which use part and full-time hired help. Some of what were subsistence, small, and medium commercial-size livestock ranches in 1978 would be permitted to increase herd sizes from actual levels by the Proposed Action, and ranches would expand into small, medium, and large commercial size categories, respectively. Also, some commercial-size operations would be required to diminish herd sizes and would move into smaller size categories.

Overall, average herd sizes for all ranch types would increase in both the short- and the long-term as a result of the Proposed Action, from 43 AUs in 1978 to 44 AUs in 1982 and 55 AUs in 2000. However, among cattle ranches, the short-term impacts on herd sizes would vary greatly. Subsistence-size ranches (1978) of this type would experience an average short-term increase of 21.4 percent in herd sizes, from 14 to 17 AUs per operator. Large commercial-size cattle ranches would experience an average short-term decrease of 9.0 percent, from 525 to 478 AUs. In the long term, all types and sizes of ranches would benefit, on the average. The net growth in average herd sizes would be equal to 27.9 percent, from 43 AUs in 1978 to 55 AUs in the year 2000 (refer to Table 3-12).

TABLE 3-12

AVERAGE HERD SIZES OF RANCHES DEPENDENT ON PUBLIC LANDS IN SAN JUAN PLANNING UNIT — 1978, 1982, AND YEAR 2000, UNDER PROPOSED ACTION AND ALTERNATIVES

Ranch Type and Size	Baseline	PA		EORV		MLFP		ELG
		Year		Year		Year		1982 and
	(1978)	1982	2000	1982	2000	1982	2000	Year 2000
Cattle, All	48	48	61	35	35	48	68	12
Subsistence	14	17	22	11	11	17	24	3
Small Commercial	112	98	127	84	84	98	156	35
Medium Commercial	268	267	328	199	199	267	362	73
Large Commercial	525	478	598	349	349	478	688	135
Sheep, All	25	33	36	20	22	33	46	6
All Ranches	43	44	55	32	32	44	63	11

TABLE 3-13

SIZE-GROUP DISTRIBUTION OF RANCHES DEPENDENT ON PUBLIC LANDS IN SAN JUAN PLANNING UNIT -- 1978, 1982, AND YEAR 2000, UNDER PROPOSED ACTION AND ALTERNATIVES

Ranch Type and Size	Baseline	PA		EORV		MLFP		ELG
		Year		Year		Year		1982 and
	1978	1982	2000	1982	2000	1982	2000	Year 2000
Cattle, All	199	200	201	200	200	200	202	87
Subsistence	168	166	163	177	177	166	160	79
Small Commercial	17	18	20	10	10	18	23	6
Medium Commercial	8	9	9	12	12	9	9	2
Large Commercial	6	7	9	1	1	7	10	0
Sheep, All	61	61	61	61	61	61	61	23
All Ranches	260	261	262	261	261	261	262	110

Source: Harbridge House, 1980.

Notes: a/ Units shown are average cattle AUs; sheep AUs were converted.
b/ PA = Proposed Action, EORV = Enhancement of Other Resource Values Alternative, MLFP = Maximization of Livestock Forage Production Alternative, ELG = Elimination of Livestock Grazing Alternative. Figures for the No Action Alternative would be the same as those for the baseline.

In the short term under the Proposed Action, grazing would take place on one more allotment than in 1978. The number of ranches in the subsistence-size category would decrease by two, and each of the other three size categories would gain an additional ranch. The changes would create the need for more ranch labor. An additional 3 to 4 persons would be employed in ranching, at least on a part-time basis, and there would be a short-term increase in the ranching population of 12 to 16 persons.

The long-term effect of the Proposed Action would be a further shift in the size-group distribution of ranches. By the year 2000, there would be two more ranches overall than in 1978. The number of ranches in the subsistence-size category (in 1978) would decrease by five and those in the commercial-size category would increase by seven. Consequently, a total of 10 to 12 additional ranch workers would be hired overall during the period from 1978 through the year 2000, at least on a part-time basis. The ranching population would increase from 1978 levels by 40 to 48 persons, or approximately 4 percent. Short- and long-term ranch size distributions are shown in Table 3-13.

Such net growth in ranch activity and consequently in the ranching population would reverse the trend of recent years. Increased ranch activity may permit more ranchers' children and employees to obtain local jobs in ranching or related sectors and to remain near their homes in the three-county area. It would diminish the dependence of the rural ranching population on sources of employment and income in urban areas and industrial sectors, and strengthen communities in unincorporated areas through increases in local spending by ranch operators and their households.

However, if the Proposed Action diminished the economic value of ranches by cutting authorized grazing levels, it could affect the finances of ranching families (potential impacts on ranch values are discussed in detail in the next subsection). If these families suffer significant short-term economic hardship as a result of grazing cuts, and thus take on additional debt or actual bankruptcy, the benefits described above would be deferred, or would occur for a changed ranching population. This population would include new purchasers of ranch properties and would be more likely to be oriented towards urban lifestyles, sharing in the attitudes and values of in-migrant groups.

Among groups in the ranching population, Anglos would face the greatest potential adverse impacts on their economic well-being. This group includes a disproportionately large number of commercial ranchers and their families. They account both for the majority of ranch-related loan activity and for commercial-size ranch livestock sales. These ranchers would experience significant short-term cuts in permitted levels of livestock grazing, reducing maximum potential herd sizes by up to an average of 12.5 percent for small commercial-size cattle ranches. Although all types and sizes of ranches would experience long-term increases from actual 1978 levels of grazing, most would experience short- and long-term decreases from grazing preference. Such decreases would diminish the market value of the affected operations and the borrowing ability of the ranchers if ranches were sold or offered as loan collateral before the predicted rangeland recovery occurs.

Reduction in the market value of ranches would have the greatest impact on those ranchers who have borrowed money for improvements and other aspects of ranch operations. Cuts would also affect commercial ranchers who routinely finance annual operations pending livestock

sales. The resulting economic impacts may cause long-established ranching families to discontinue ranch operations. Contacts with ranchers who would be affected indicate that, while about half have avoided incurring long-term debt obligations, more than a quarter are heavily indebted. Approximately 8 to 10 ranches would have to be refinanced. Depending on the attitude of lenders, foreclosure might be forced by the short-term cuts in permitted grazing. It is not likely that the families connected with these ranches would be able to persist in ranching, at least in the short-term. Family members would have to try to find other sources of employment, and income. Short-term adjustments would probably be difficult.

Regardless of the practical consequences of the Proposed Action, many ranchers and members of their families would be likely to resent government plans because they appear to restrict management by the ranchers. Ranchers emphasize the importance of basic values of independence and self-sufficiency. The Proposed Action would subject ranches to a greater measure of external oversight and regulation than is presently the case. Consequently, many ranchers presently perceive that their traditional freedom, a most valued feature of ranching, would be undermined. In this sense, the opposition of ranchers, their family members, and rural neighbors toward government plans stems as much from the idea of federal intervention in ranch management as from specific impacts which result from that management. Ranchers also have a perception that the officials who administer federal range programs do not necessarily come from ranching backgrounds, and do not share or readily understand the basic values or lifestyles of the ranching population. The Proposed Action therefore appears to them to be a product of an alien, urban culture. The extent to which ranch values and lifestyles are influenced by changes in the ranching economy would probably be dependent on the degree to which traditional attitudes of the ranching population can be altered to accommodate the concept of multiple-use management and the fact of expanded government regulation.

Hispanos and Indians, who make up the majority of subsistence size ranch operators and their families, would benefit from the Proposed Action. The short-term adjustments to permitted grazing levels would allow increases in cattle herd sizes of subsistence ranchers by an average of 3 AUs, and in the long term, the average number of AUs per rancher in that size group would be increased by 8 AUs. For subsistence-size cattle ranches, these gains would have the effect of increasing net cash income by 25.0 percent in the short-term and 62.5 percent in the long-term. These increases would reduce the extent of rural poverty and the need for off-ranch employment.

The Proposed Action would encourage the continuation of traditional, pastoral lifestyles among Navajos at a time when large-scale energy resource development in the region is threatening a transformation of rural Indian life. The Proposed Action would also support the maintenance of rural, agrarian occupations by others. For both Hispanos and Indians the Proposed Action would have the effect of strengthening the independence and integrity of the particular ethnic or racial group and its traditions, by adding to the resources under the control of group members and lessening their dependence on non-traditional sources of employment and income.

Impacts on the Regional Economy. The Proposed Action would have a negligible impact on total employment and income in the three-county area. Expenditures associated with undertaking the mechanical treatments and constructing the support facilities included in the Proposed Action would equal approximately $250,000 a year (in 1978 dollars). This amount would be spent annually in the short term and in the first part of the program interval. Also during the short term and program interval, the Proposed Action would increase livestock sales at best by $27,690 a year

and decrease net cash income to ranch operators by $23,615 a year (as described in detail in the following subsection). In the short term, then, no more than $277,690 a year would be added to the economy of the San Juan Basin, and impacts on personal income would be much less. In an economy with a volume of business over $800 million in 1978, the direct impacts of the Proposed Action would represent less than 0.1 percent. Direct impacts on the number of jobs in ranching as previously discussed would represent an increase of less than 0.1 percent of the total number of jobs in all occupations in both the short term and long term. Direct impacts on the amount of personal earnings from ranch operations would be less than 0.1 percent of total personal income in the region, as discussed further in the next subsection.

Indirect impacts on employment and income would also be relatively insignificant. In the short term, the projected total increase in livestock production would create an additional 3 to 4 full-time jobs outside ranching. In the long term, 12 additional jobs would be created, of which 6 would be in manufacturing (the food-processing and meat-handling industries), 3 would be in agricultural services (the production of feed), and 3 would be in other sectors.

This low level of direct impacts on employment and income reflects the business conditions which characterize ranching in the San Juan Basin. At present, ranches are not profitable as businesses and most ranchers have low incomes from their ranching efforts. Projected increases in ranch production would improve profitability and enlarge net cash incomes, but a large portion of the gain would be taken by ranch businesses to finance needed purchases of new animals, equipment, and feed, and to cover business expenses. Such expenditures often flow out of the region, to manufacturers and producers elsewhere, rather than remaining in the region as personal spending and savings.

Impacts on the Economics of Ranch Operation. The Proposed Action would, on the average, cut authorized levels of livestock grazing in the Planning Unit for all types and sizes of ranches in the short term. In the long term, preference grazing levels would exceed 1978 actual grazing use, on the average, for all ranch types and sizes, but few ranches would be restored by the year 2000 to the authorized levels of 1978. When authorized (not actual) grazing levels are used to compute the relative importance of public land AUMs, the Proposed Action would reduce dependence on public land. In the short term, dependence on authorized use of public lands would drop from 51 percent of all livestock forage (1978) to 45 percent in 1982 (Appendix L-1). Gradual increases in grazing capacities of public land during the program interval would raise the average percent dependence to 49 percent by the year 2000 (refer to Table 3-15 and Appendix L-1).

Because subsistence-size cattle and sheep ranches would not experience long-term cuts of more than 5 percent from present authorized levels of public land AUMs, these operations would have essentially the same dependence in the year 2000 as in 1978 (55 and 62 percent, respectively). Commercial cattle ranches of all sizes would be less dependent on public lands in the long term than they are at present. This change indicates a shift in the way in which use of public rangelands in the Planning Unit would be apportioned. Under the Proposed Action, the share of commercial size cattle ranches in total public land AUMs in the Planning Unit would be reduced from 60.0 (1978) to 57.4 percent by the year 2000, while the share of subsistence-size cattle ranches would be increased from 27.1 to 28.3 percent, and the share of sheep ranches (most of which are subsistence operations) would also grow, from 13.0 to 14.2 percent.

TABLE 3-14

TOTAL LIVESTOCK SALES AND NET CASH INCOME OF RANCHES DEPENDENT ON PUBLIC LANDS IN SAN JUAN PLANNING UNIT — 1978, 1982, AND YEAR 2000, UNDER PROPOSED ACTION AND ALTERNATIVES

	Ranch Type and Size						
Action and Year	Cattle, All	Cattle, Subsistence	Cattle, Small Commercial	Cattle, Medium Commercial	Cattle, Large Commercial	Sheep, All	All, Total
Baseline (1978)							
Livestock Sales	$1,243,175	$270,480	$228,565	$283,840	$460,290	$175,375	$1,418,550
Net Cash Income	310,470	26,880	36,380	76,000	171,210	17,995	328,465
PA (1982)[a/]							
Livestock Sales	1,213,220	328,440	198,730	283,840	402,210	233,020	1,446,240
Net Cash Income	279,230	33,600	29,920	76,000	139,710	25,620	304,850
PA (Year 2000)							
Livestock Sales	1,561,560	425,040	260,950	346,280	529,290	261,690	1,823,250
Net Cash Income	391,500	43,680	43,860	96,000	207,960	29,585	421,085
EORV (1982 and Year 2000)							
Livestock Sales	875,580	212,060	166,765	196,750	300,005	154,315	1,029,895
Net Cash Income	193,035	20,715	23,100	39,935	109,285	15,740	208,775
MLFP (1982)							
Livestock Sales	1,213,220	328,440	198,730	283,840	402,210	233,020	1,446,240
Net Cash Income	279,230	33,600	29,920	76,000	139,710	25,620	304,850
MLFP (Year 2000)							
Livestock Sales	1,829,815	463,960	300,460	385,430	679,965	326,705	2,156,520
Net Cash Income	525,655	47,700	53,760	110,715	313,480	38,780	564,435
ELG (1982 and Year 2000)							
Livestock Sales	296,990	57,725	66,885	68,135	104,245	41,715	145,960
Net Cash Income	51,755	5,440	7,370	59,520	29,425	3,750	33,175

Source: Harbridge House, 1980.

Note: a/ PA = Proposed Action
EORV = Enhancement of Other Resource Values Alternative
MLFP = Maximization of Livestock Forage Production Alternative
ELG = Elimination of Livestock Grazing Alternative.

TABLE 3-15

PERCENT DEPENDENCE ON AUTHORIZED USE OF PUBLIC LANDS IN SAN JUAN PLANNING UNIT, BY RANCH SIZE GROUP — 1978, 1982, AND YEAR 2000, UNDER PROPOSED ACTION AND ALTERNATIVES

Ranch Type and Size	Baseline	PA[a/]		EORV		MLFP		ELG
		Year		Year		Year		1982 and
	1978	1982	2000	1982	2000	1982	2000	Year 2000
Cattle, All	49	42	48	34	34	42	50	0
Subsistence	55	49	55	37	37	49	57	0
Small Commercial	50	44	49	36	36	44	53	0
Medium Commercial	42	36	41	30	30	36	42	0
Large Commercial	48	40	45	31	31	40	49	0
Sheep, All	62	62	63	46	46	62	67	0
All Ranches	51	45	49	36	36	45	53	0

Source: Harbridge House, 1980.

Note: a/ PA = Proposed Action; EORV = Enhancement of Other Resource Values Alternative; MLFP = Maximization of Livestock Forage Production Alternative; ELG = Elimination of Livestock Grazing Alternative. Figures for the NA Alternative would be the same as those for the baseline.

The redistribution of range resources from commercial operations to subsistence-size ranches would be especially evident during the short term. The different impacts and cumulative effect by ranch type and size are shown in the typical ranch budgets given in Appendix L-2. Under the Proposed Action, the net cash income of a typical subsistence cattle ranch would rise from the $160 estimated for 1978 to $200 in 1982, a gain of 25.0 percent. Over the same period, the net cash income of a typical sheep ranch would increase from $295 in 1978 to $420 in 1982, a 42.4 percent rise. By contrast, the net cash income of a typical small-size commercial cattle ranch would fall by $380, or 17.8 percent, and the income of a typical large-size commercial cattle ranch would drop by $5,250, or 18.4 percent. The net cash income of a typical medium-size commercial cattle ranch would be unchanged.

Overall, livestock sales would increase in the short term by $27,690 from 1978, but net cash income to ranch operators would decline by $23,615 (Table 3-14 and Appendix L-3). This drop in the profitability of livestock ranches would reflect the relatively greater share of total AUMs, and therefore of livestock sales, of subsistence-size operations, which have higher relative costs than larger ranches. The drop would also be due to large new losses incurred by the commercial cattle ranches with reduced herds. These ranches would suffer an overall short-term total decline of $87,915 in livestock sales and $37,960 in net cash income. For commercial cattle ranches, the Proposed Action would create short-term economic hardship and financial uncertainty.

Because the initial cuts would be temporary, most ranchers experiencing losses as a result of the cuts would probably continue ranching until the range developments and vegetation treatments that the BLM would undertake in the program interval could take effect. Most of the cuts would be restored by the early 1990's. In order to survive in business, ranchers would have to cut costs per unit of production, borrow the funds needed to cover projected losses, or suspend operations for a period of 5 to 10 years. Although some individual ranchers may be able to obtain marginal increases in ranch output by operational changes that would lead to such results as improved calving (or lambing) percentage or higher selling weights of livestock, most ranchers do not possess the flexibility to do so. Moreover, some of the practices which might be used to increase ranch efficiency are costly, and would place additional demands on scarce capital.

At the same time, the ranchers' ability to borrow money may be affected by the reductions from present authorized grazing levels to new, lower (and closer to actual) levels of permitted grazing on allotments. Overall, the loan valuation of livestock ranches would be cut by an estimated $1.2 million, or more than 18.4 percent. Under such circumstances, many ranchers would have difficulty in meeting existing debt obligations without additional borrowing to continue operations. With outstanding loans valued at between $2.2 and $4.6 million, and with approximately eight to ten ranches having a high degree of indebtedness, it is unlikely that financial institutions would increase their assistance or relax their requirements. For many commercial cattle ranches, the necessary strategy for survival would probably have to include some short-term cut back or suspension of operations.

In the long term, all parts of the ranching economy would gain from the Proposed Action. As in the short term, the greatest relative economic benefits would accrue to subsistence-size cattle and sheep ranches (Appendix L-4). For a typical cattle ranch with fewer than 75 AUs, net cash income would climb from the $160 estimated in 1978, and the $200 forecast

for 1982, to $260 in the year 2000, an increase of 62.5 percent over the 1978 base. By contrast, a typical cattle ranch with more than 349 AUs would see net cash income rise by only 21.3 percent, from $28,585 in 1978, and $23,285 in 1982, to $34,660 in the year 2000. The other types and sizes of ranches would register similar gains.

The cumulative effect of the Proposed Action would be to increase total livestock sales from all types and sizes of ranches using public land in the Planning Unit by $404,700 or 28.5 percent (from $1,418,550 in 1978 to $1,823,250 in the year 2000). Net cash income would be increased by 28.2 percent, or $92,620 (from $328,465 in 1978 to $421,085 in the year 2000). Notwithstanding these gains, ranching would still be uneconomic as a business in most cases. Return on investment would improve over the twenty-two year period, but relatively slightly, from a negative 6.5 percent on average in 1978 to a negative 6.2 percent at the end of the century. The total costs, receipts, and returns for the year 2000 are given in Appendix L-5.

Summary. Demographic impacts throughout the region under the PA would be slight and practically indistinguishable from the more significant effect of regional energy resource development. In the long term, the ranching population would increase by 40 to 48 persons (about four percent), and localized business expansion would occur, particularly in the vicinity of Counselor, Lybrook, and Nageezi. However, some temporary rural to urban population shifts would take place, and related adjustment difficulties would be expected as a result.

There would be little direct or indirect impact on the whole regional economy as a result of implementation of the PA.

In the long term under the PA, there would be an expansion of available AUs for both cattle and sheep operations, on average, in all four identified ranch size categories (subsistence and small, medium, and large commercial). Herd sizes would increase an overall average of 27.9 percent, from 43 AUs in 1978 to 55 AUs in the year 2000. By that year there would be two more ranches overall than in 1978. There would be five less ranches in the subsistence-size category and seven more ranches of commercial size.

In both the short term and long term net cash income for subsistence-size ranches would increase under the PA. For a typical cattle ranch with fewer than 75 AUs, such income would climb from the $160 estimated for 1978, and the $200 forecast for 1982 to $260 in the year 2000, an increase of 62.5 percent over the 1978 base.

Small- and large-size commercial cattle ranches would, on average, experience short-term declines in net cash income; however these ranches, and those in the medium commercial size group, would experience long-term increases in net cash income.

The typical cattle ranch with more than 349 AUs would see net cash income rise by 21.3 percent, from $28,585 in 1978, and $23,285 in 1982, to $34,660 in the year 2000. The other types and sizes of ranches would experience similar gains.

No Action Alternative

Under the NA Alternative, no impact would occur to the social and economic conditions described in Chapter 2 for the three-county area. If the recent trends in ranch activity persist

unchanged, further decline of the local ranching economy and reduction in the size of the ranching population would occur.

Elimination of Livestock Grazing Alternative

The ELG Alternative would have a severely negative impact on the socioeconomic conditions of the ranching population. In terms of the total economy of the San Juan Basin such impact would be of minor importance, but it would be felt severely by the ranchers involved. The ELG Alternative would reduce the ranching population by 58.9 percent, from 1,070 persons to 440. It is estimated that 150 of the 260 ranches utilizing allotments in the Planning Unit would cease operations, leaving 110 to continue. An estimated 175 ranch workers would have to seek new sources of employment and income, and an additional 180 workers in sectors closely tied to ranching would lose their part- or full-time jobs.

As a result, the populations and economic bases of rural communities would decline, and the concentration of population and economic activity in urban areas would be slightly increased. In addition, social and psychological problems would occur among the ranching population. Ranchers and workers who have specific love of and skills for ranching would find it necessary to give up or significantly reduce their participation in ranching. The attitudes and values of members of ranching families would be subjected to strong pressures in urban and industrial environments. All groups in the ranching population would be affected by these pressures.

As shown in Table 3-12, average herd sizes would be cut from an overall average of 43 in 1978 to 11 in 1982 (compared to 44 in 1982 under the Proposed Action). Of the 110 remaining ranches, only 8 cattle ranches and 1 sheep ranch would be larger than 74 AUs in size, as shown in Table 3-13. Total livestock sales would drop from $1,418,550 in 1978 to $145,960 by 1982, and net cash income to ranchers would be cut from $328,465 in 1978 to $33,175 four years later, a drop of 89.9 percent. These changes are shown in Table 3-14. The 110 remaining ranchers would produce an average of just over $300 in net cash income each. The loan valuation of ranches would be reduced by an estimated $4.3 million, and depending on ranch size and the timing of cuts, ranchers would default on outstanding loans valued at $2.2 to 4.6 million. Indirect impacts on financial institutions would be extensive.

Maximization of Livestock Forage Production Alternative

The implementation of this alternative would have short-term impacts similar to those of the Proposed Action. However, the BLM would set long-term management objectives to achieve optimum grazing capacities on public lands, and the long-term benefits to livestock ranches and the ranching population under this alternative would be significantly greater than with the Proposed Action. The ranching population would grow by 44 to 52 persons in the long term as a result of hiring by an estimated 12 additional commercial-size ranches. These ranches would consist of what were, in 1978, subsistence-size operations, which would grow with increases in permitted grazing on public lands.

Expansion of ranching activity would be evident in all types and sizes of ranches. Overall, average herd size would rise from 43 AUs per ranch in 1978 to 63 in the year 2000 (whereas with the Proposed Action, the average at the end of the century would be 55 AUs; refer to Table 3-12). Under the MLFP Alternative, commercial cattle ranches would number 42 out of 262

in the year 2000 (compared to 38 out of 262 in that year under the Proposed Action; see Table 3-13). Because of the additional number of public land AUMs, percent dependence on authorized use of public lands would rise to an average of 53 percent for the entire group (including all types and sizes), compared to 51 percent in 1978 and 49 percent in the year 2000 under the Proposed Action, (Table 3-15).

Although the short-term economic hardship and financial uncertainty described for the Proposed Action would also result from the MLFP Alternative, the long-term benefits in terms of ranch production, employment, and income would be significantly greater and would help to alleviate any short-term costs to operators. This alternative would, on the average, produce higher authorized grazing levels in the year 2000 than existed in 1978. Consequently, in the long term, market values of livestock ranches would rise above present levels, and both ranch operators and financial institutions would have the assurance during the short term that initial declines in loan valuation would be reversed.

Under the MLFP Alternative, it is therefore more likely that ranchers would be able to renegotiate outstanding loans and obtain further assistance than they would under the Proposed Action. Furthermore, because cuts in permitted numbers would be restored over the course of the program interval, market values of livestock ranches would appreciate gradually after 1982, until by the mid 1990's they would equal 1978 figures and would provide operators with new equity. Ultimate gains in the market values of affected ranches would provide a basis for repayment of loans taken out during the short term.

In the long term, the economic position of livestock ranches with allotments in the Planning Unit would be strengthened by the implementation of the MLFP Alternative. As shown in Table 3-14, total sales by these ranches would reach $2,156,520 in the year 2000 under this alternative (compared to $1,418,550 in 1978 and $1,823,250 in the year 2000 under the Proposed Action). Net cash income to ranch operators would rise from $328,465 in 1978 to $564,435 at the end of the century. This latter amount of income would be $143,350 (or 34 percent) more than under the Proposed Action. All ranch types and sizes would benefit.

The Proposed Action would have relatively greater benefits for subsistence ranchers than for commercial ranchers. The reverse would be true for the MLFP Alternative. It would increase net cash income to cattle ranches with fewer than 75 AUs by 9.2 percent over income under the Proposed Action, but would add 22.6 percent to the income of small-size commercial cattle ranches, 15.3 percent to medium-size commercial cattle ranches, and 50.7 percent to large-size commercial cattle ranches. Because Anglos represent a large percentage of ranchers in the three commercial size-groups, they would share in most of this additional benefit.

The increase projected for the large commercial-size group would be sufficient to make these ranches, on the average, profitable as businesses, earning $48,160 annually in final business profits (an average 0.6 percent return on investment).

Summary. In the long term under the MLFP Alternative, both sheep and cattle ranches in all size categories would benefit on average by a rise in net income. Herd size average would rise from the 1978 figure of 43 AUs to 63 AUs by the year 2000. The market value and loan valuation of ranches would rise above present levels.

Enhancement of Other Resource Values Alternative

This alternative would cut ranch production, employment, and income in both the short term and the long term; unlike under the Proposed Action, no long-term benefits would accrue to the ranching economy. Because it would cut average herd sizes of ranches (Table 3-12) and reduce the number of commercial medium- and large-size cattle ranches (Table 3-13), this alternative would not cause any increases in the ranching population, nor would it strengthen rural communities in the manner of the Proposed Action. Dependence on authorized use of public lands would be cut from an overall average of 51 percent to 36 percent (Table 3-15).

In the short term, total livestock values would fall $388,655 from 1978 levels, whereas under the Proposed Action, these sales would rise by $27,690. In the long term, sales would remain $388,655 below 1978 totals, and would be over $790,000 less than with the Proposed Action (Table 3-14).

The EORV Alternative would also cut the net cash income of ranchers and their families by an average of 36.4 percent in the short term, compared to 7.2 percent under the Proposed Action. Reductions in average net cash income would occur for all ranch types and sizes. Under the EORV Alternative, short-term cuts that would diminish ranch production and income would be perpetuated into the long term, because the progressive increases in authorized numbers that would occur during the program interval under the Proposed Action would not take place. Therefore, the same kinds of adverse economic impacts which characterized the Proposed Action in the short term would characterize implementation of this alternative.

Some individuals would abandon ranching. It is estimated that approximately 10 to 15 ranchers not now primarily employed outside ranching would have to seek other employment. In addition, reductions in authorized grazing levels would decrease market values of ranches and jeopardize existing debt arrangements. It is estimated that the loan valuation of livestock ranches would be cut by $1.5 million, forcing 15 to 20 ranches to renegotiate or to default on outstanding loans of $2.2 to $4.6 million.

In the long term, the EORV Alternative would have many of the same kinds of socioeconomic impacts forecast for the short term under the Proposed Action, but because these impacts would be both of larger magnitude and of indefinite duration, they would be more severe. This alternative would be undertaken at great cost to the ranching economy of the San Juan Basin.

Because of their largely non-economic nature, it is uncertain whether the substantial benefits to the region, in terms of increased production of other resources on public lands, would balance or outweigh specific costs to ranchers and their families.

Economic Impacts on Non-Ranching Resources

A dollar amount has been estimated for selected non-ranching resources or values, including big-game wildlife and outdoor recreation. Certain impacts on the various physical resources of the Planning Unit (caused by implementation of the Proposed Action or alternatives) would have economic effects on these non-ranching values. These changes are presented in Table 3-16. In addition, unquantifiable social reactions are expected, such as increased aesthetic enjoyment or improved quality of life. These factors are shown in Table 3-17.

TABLE 3-16

COMPARISON OF SELECTED NON-RANCHING ECONOMIC IMPACTS BY ALTERNATIVES

Activity	PA Existing	PA Long Term	NA Long Term	ELG Long Term	MLFP Long Term	EORV Long Term
Big Game Hunting						
Deer						
Visitor Days[a]	46,840	94,623	46,840	163,430	94,623	150,134
Value	$1,473,140	$2,975,899	$1,473,140	$5,139,874	$2,975,899	$4,721,715
Barbary sheep						
Visitor Days[a]	224	472	385	770	472	748
Value	$7,057	$14,841	$12,109	$24,217	$14,841	$23,525
Elk						
Visitor Days[a]	68	136	68	204	136	187
Value	$4,896	$9,792	$4,896	$14,688	$9,792	$13,464
Sub Total						
Visitor Days[a]	47,132	95,231	47,293	164,404	95,231	151,069
Sub Total Value	$1,485,093	$3,000,532	$1,490,145	$5,178,779	$3,000,532	$4,758,704
Other Recreation[b]						
Visitor Days[c]	546,994	792,028	792,028	792,028	792,028	792,028
Value	$2,270,025	$3,286,916	$3,286,916	$3,286,916	$3,286,916	$3,286,916
Total Visitor Days	594,126	887,259	839,321	956,432	887,259	943,097
Total Value of Visitor Days	$3,755,118	$6,287,448	$4,777,061	$8,465,695	$6,287,448	$8,045,620

Notes:
a/ Visitor days as calculated correlate with estimated animal populations.
b/ This refers to non-consumptive outdoor recreation activities. It includes all recreation activities shown in Apprendix J, except hunting and fishing activities.
c/ Visitor days as calculated relate to population forecasts.

TABLE 3-17

COMPARISON OF LONG-TERM SOCIAL REACTIONS TO IMPACTS ON SELECTED RESOURCES

Resource	PA	NA	ELG	MLFP	EORV
Wildlife	Increases would occur in the quantity and quality of hunting opportunities. Enhancement of aesthetic values would be provided by the existence of wildlife including free-roaming wild horses. Increased public satisfaction would result from knowledge of the provision for continued existence of wildlife and from knowledge that the horses are being protected as symbols of the history and pioneer spirit of the West. Mixed reactions would occur, especially among ranchers, to special provisions of AUMs for wildlife and wild horses.	No significant impacts would result from BLM non-action, as wildlife numbers are forecast to remain constant. Public dissatisfaction would likely result because of no provision of AUMs for wild horses.	Increases in the quantity and quality of hunting opportunities would be greater than under the PA. Enhancement of aesthetic values provided by free-roaming wildlife, including wild horses, would be greater than under the PA as wildlife populations are expected to be higher and as 52 percent more AUMs would be provided for wild horses. More public satisfaction would result from knowledge that provision was being made for the continued existence of wildlife and from knowledge that the horses are being protected as symbols of the history and pioneer spirit of the West. Development of social adjustment and psychological problems would occur among the present ranching population due to disruption of lifestyle.	Increases would occur in the quantity and, probably, in the quality of hunting opportunities. Enhancement of aesthetic values would be provided by the existence of wildlife including free-roaming wild horses. Increased public satisfaction would result from knowledge of the provision for continued existence of wildlife and from knowledge that the horses are being protected as symbols of the history and pioneer spirit of the West.	Increases in the quantity and quality of hunting opportunities, would be greater than under the PA but less than under the ELG Alternative. Enhancement of aesthetic values provided by free-roaming wildlife and wild horses would be greater than under the PA, but less than under the ELG Alternative. Increased public satisfaction would result from knowledge of the provision for continued existence of wildlife and from knowledge that the horses are being protected as symbols of the history and pioneer spirit of the West. There would be mixed public reactions, probably mostly unfavorable among the ranchers, to the special provisions of AUMs for wildlife and wild horses. Development of social adjustment and psychological problems among the present ranching population due to disruption of lifestyles would occur, but to a lesser extent than under the ELG Alternative.

TABLE 3-17 (Concluded)

Resource	PA	NA	ELG	MLFP	EORV
Forestry	Cordwood yield would remain at approximately present levels. Some of the public would continue to derive satisfaction from harvesting and using firewood. Those who depend on wood as their sole fuel for heating and cooking could continue this practice. Cultural values associated with using pinyon as fuel could continue.	Cordwood yield would remain at approximately present levels. Some of the public would continue to derive satisfaction from harvesting and using firewood. Those who depend on wood as their sole fuel for heating and cooking could continue this practice. Cultural values associated with using pinyon as fuel could continue.	Cordwood yield would remain at approximately present levels. Some of the public would continue to derive satisfaction from harvesting and using firewood. Those who depend on wood as their sole fuel for heating could continue this practice. Cultural values associated with using pinyon as fuel could continue. A reduction in quantity of ponderosa pine due to increased competition from grasses and forbs could cause concern among those who enjoy this resource.	After possible increases as a result of clearing to increase forage, the activity of harvesting and using firewood and the satisfaction derived from this, would be reduced by an estimated 40 percent as a result of a decrease in sustained yield. Because of the reduction in supply, hardship could occur among those who rely on wood exclusively for cooking and heating. The cultural values associated with using pinyon as fuel would become proportionately more difficult and might not be fully satisfied under the condition of diminished supply.	Cordwood yield would remain at approximately present levels. Some of the public would continue to derive satisfaction from harvesting and using firewood. Those who depend on wood as their sole fuel for heating and cooking could continue this practice. Cultural values associated with using pinyon as fuel could continue.
Recreation	Hunting days would be expected to increase by approximately 96 percent and associated experiences to improve in quality. Visitor-days for outdoor recreation activities, other than hunting, would increase by about 52 percent. The quality of recreation experiences would be expected to improve due to vegetation treatments and increases in wildlife.	Hunting days are forecast to increase by 5 percent. Quality of the experiences would probably not improve. Visitor-days for outdoor recreation activities, other than hunting, would increase by about 52 percent.	Hunting days would be expected to increase by approximately 226 percent and associated experiences to improve in quality. Visitor-days for outdoor recreation activities, other than hunting, would increase by about 52 percent. The quality of these recreation experiences would be expected to improve due to changes in the natural land cover and increases in wildlife.	Hunting days would be expected to increase by approximately 96 percent and associated experiences to improve in quality. Visitor-days for outdoor recreation activities, other than hunting, would increase by about 52 percent. The quality of these recreation experiences would be expected to improve due to vegetation treatments, and increases in wildlife.	Hunting days would be expected to increase by approximately 201 percent and associated experiences to improve in quality. Visitor-days for outdoor recreation activities, other than hunting, would increase by about 52 percent. The quality of these recreation experiences would probably improve due to changes in vegetation and would improve due to increases in wildlife.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT

Implementation of the Proposed Action (PA) or the Enhancement of Other Resource Values (EORV) Alternative would cause a short-term loss of vegetation on 54,094 acres due to construction of range developments and vegetation treatments. The vegetation treatments and effects of grazing management would result in long-term increased forage productivity of 40,071 AUMs in the Planning Unit. About 31,807 AUMs of this increased productivity would come from public lands.

Under the No Action (NA) Alternative, 651,771 acres would continue to be grazed at levels above the surveyed grazing capacity and 626,850 acres would be grazed at levels equal to or below the surveyed grazing capacity. The net effect would be increased long-term forage productivity of about 905 AUMs in the Planning Unit. About 656 AUMs of this inreased productivity would be from public lands.

Under the Elimination of Livestock Grazing (ELG) Alternative, domestic livestock would not graze the 926,909 acres of public land in the allotments. The long-term forage productivity would increase about 29,048 AUMs.

Under the Maximization of Livestock Forage production (MLFP) Alternative, there would be a short-term loss of vegetation on 211,855 acres where mechanical vegetation treatments are carried out and where range developments are constructed. There would also be a short-term reduction in vegetation on 25,705 acres where chemical treatments for sagebrush control are used. The vegetation treatments and effects of grazing management would result in long-term increased forage productivity of about 56,508 AUMs in the Planning Unit. About 48,244 AUMs of this increased productivity would come from public lands.

Under the PA, soil losses on the 96 acres disturbed during construction would be short-term in nature. The 31 acres used for developments would experience a long-term loss of productivity. Increased short-term erosion on the 54,119 acres receiving vegetation treatment, would be offset in the long-term by a 20 percent reduction in sediment yield.

Implementation of the MLFP Alternative would require intensive management practices that would result in long-term increases in soil loss. The effective life of detention dams and other water-holding structures would decrease over the long term. Soil loss resulting from construction of range developments would be short-term on 96 acres, but loss of productivity on 31 acres used for range developments would be long-term. Overall soil productivity would enter into a long-term decline caused by soil loss and by vegetation production of a higher rate than the soil resource could support.

Implementation of the EORV Alternative would result in short-term increases in erosion on 96 acres disturbed by construction of range developments; 31 acres would be removed from production in the long term. Soil loss caused by vegetation treatments would increase during the short-term on about 183,465 acres.

Under the PA and the MLFP Alternative, short-term use of water for livestock watering should not affect its long-term productivity; however, water availability for other uses would be reduced 34 acre-feet per year under the PA and 57 acre-feet per year under the MLFP Alternative.

Short-term increases in runoff following vegetation treatment would be offset by long-term decreases in runoff after new vegetative cover was established. Long-term productivity of the water resource would increase because reduced runoff would make more water available to plants as soil moisture.

Under the EORV Alternative, short-term increases in runoff following vegetative treatment would be offset by long-term decreases in runoff after new vegetative cover is established. Long-term productivity of the water resource would increase because reduced runoff would make more water available to plants as soil moisture.

Under the PA and the MLFP Alternative, short-term wildlife species diversity and numbers in some areas of vegetative treatments would be below natural numbers until vegetation developed, assuming some natural characteristics. Big game species would experience short-term initial high forage competition and long-term reduced inter- and intraspecific competition for forage, space, and shelter.

Beneficial impacts of grazing systems which provide for reduced livestock grazing would be evident over both the short and long terms with respect to improved forage and wildlife habitat. Stream banks and lake shores would be increasingly stable in most instances over the long term, with decreasing amounts of erosion in most localities.

Temporary silt loads in streams during the short term would be outweighed over the long term by stabilized soils covered by desirable forbs and grasses. A stable aquatic habitat with an improved high quality fishery would be evident over the long term.

Under the NA Alternative, the short- and long-term wildlife populations of most species would be kept from reaching higher population levels due to intraspecific competition and competition with livestock. Implementation of the ELG Alternative would result in wildlife being subjected to only intraspecific competition, which would decline as forage and shelter became more abundant. However, if wildife populations should ever increase beyond the carrying capacity of any given area, intraspecific competition could, in the long term, become severe. This would have impacts on range similar to those created by livestock grazing. Such increases could be controlled through regulated harvests by hunters and through natural predation.

Implementation of the EORV Alternative would result in the removal of livestock from poor to fair range, thereby eliminating competition between livestock and grazing wildlife species, benefitting wildlife in the long term.

Under the PA and the MLFP Alternative, the short-term allocation to wild horse use (276 AUMs), would maintain the existing herd in the long term. Under the ELG and EORV Alternatives, short-term and long-term herd production and condition would probably improve due to decreased forage competition by livestock. Wild horse numbers in excess of 35 head would be removed.

Under the PA, there would be a short-term reduction from preference of 31,036 livestock AUMs, and an increase of 3,189 AUMs above present licensed use. In the long term, livestock AUMs would still be below preference by 18,060 AUMs, but would be increased by 24,165 AUMS over average licensed use.

Implementation of the MLFP Alternative would result in a short-term reduction from preference of 39,036 livestock AUMs, and an increase above average licensed use by 3,190 AUMs. In the long term, livestock AUMs would still be below existing preference by 1,623 AUMs, but would be increased by 40,602 AUMs over average licensed use.

Implementation of the EORV Alternative would result in both a short and long term reduction from preference of 66,330 AUMs. Net livestock AUMs would also be reduced from average licensed use in the short and long term by 24,105 AUMs.

Under the PA, long-term productivity in the timbered areas would increase due to the increased survival rate of young ponderosa pine seedlings under a grazing management program, providing that no long period of deferred grazing is imposed on timbered areas.

Implementation of the MLFP Alternative would result in an increase in long-term productivity in timbered areas, due to the expected increased survival of young ponderosa pine seedlings if no long period of deferred grazing is imposed on timbered areas.

Under the PA, there would be a long-term increase of 19,458 visitor-days of recreation use resulting from an increase in big-game populations. Implementation of the ELG Alternative would result in a long-term enhancement of the recreation resource. Recreation visitor-days would increase by 88,631 as a result of hunting use associated with the increased big-game populations.

Under the MLFP Alternative, the character of the recreation resource would change over the long term as a result of the increased big-game population that would result from the proposed 237,464 acres of vegetation treatment. The resulting increase in hunting use would lead to a 2 percent increase in visitor days. Under the EORV Alternative, recreation visitor-days would increase by 75,296 as a result of hunting use associated with the increased big-game populations.

Under the PA and the MLFP and EORV Alternatives, long-term productivity would be eliminated for surface cultural resources subjected to chaining or plowing, from all excavated sites, and from any sites destroyed by seeding, erosion, unauthorized collection, vandalism, or livestock. Under the NA Alternative, long-term productivity would be eliminated for cultural resources destroyed by erosion, unauthorized collection, vandalism, and livestock. Under the ELG Alternative, long-term productivity would be eliminated from sites destroyed by erosion, unauthorized collection, and vandalism.

Under the PA, grazing use of public land in the San Juan Planning Unit foregone during the short-term would be exchanged for long-term improvement in the size and viability of the ranching economy. However, for the types and sizes of ranches which include most ranch operators (subsistence-size cattle ranches and sheep ranches of all sizes) the Proposed Action would involve no exchange because it entails both a shortand long-term improvement in socioeconomic conditions.

Under the NA Alternative, deferral of full provision for the costs of depreciation would effectively trade short-term enjoyment of ranching activities and lifestyles for a further decline in the long-term economic viability of the ranching unit.

Implementation of the ELG Alternative would eliminate short- and long-term social and economic returns derived from ranching operations on public land without obtaining direct short-term increases in the socioeconomic productivity of other resources in the Planning Unit. Over the long term, increases in socioeconomic productivity would be related to other uses, including outdoor recreation activities.

Implementation of the MLFP Alternative would result in the same relationship between short-term uses and long-term productivity as with the Proposed Action, except that ultimate levels of livestock production would be increased. Implementation of the EORV Alternative would cut livestock production and diminish the viability of the ranching sector in order to achieve higher levels of production from other resources. It would effectively shift emphasis in productivity of public lands in the San Juan Planning Unit from ranching to other activities. This shift would cut production from a basic economic sector producing food and fibre in order to achieve different optimum levels in management of natural resources.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Under the Proposed Action (PA), the Maximization of Livestock Forage Production (MLFP) Alternative, and the Enhancement of Other Resource Values (EORV) Alternative, the loss of vegetation on 31 acres where permanent range developments were constructed would be irreversible.

Under the PA and the MLFP and EORV Alternatives an irretrievable and irreversible loss of potential knowledge resulting from future advances in archaeological techniques would occur for sites mitigated by survey and recordation or excavation prior to vegetation treatments. Irreversible and irretrievable losses from erosion, unauthorized collection, and vandalism would occur under the PA and all alternatives. Additional losses from rubbing, leaning and trampling by livestock would occur under the PA and all alternatives except the ELG.

Under the PA, expenditures estimated at $250,000 a year (in 1978 dollars) would represent an irreversible and irretrievable commitment of resources. However, the funds committed would make rangeland improvement possible. As a result, expansion of ranching activity and improvement in the economic basis of the ranching population would occur. Implementation of the Elimination of Livestock Grazing (ELG) Alternative would result in livestock production foregone; diminished net cash incomes to ranch operators and their families; and, the necessary abandonment of ranching lifestyles and settings by 150 households. These all represent irreversible and irretrievable commitments. Implementation of the MLFP Alternative would entail government expenditures of $380,000 a year for nine years. This money would represent an irreversible and irretrievable commitment of federal resources. Implementation of the EORV Alternative would result in the loss of livestock production valued at $388,655 a year and the loss to ranchers of about $120,000 a year. These would both be irreversible and irretrievable commitments.

CHAPTER 4

CONSULTATION AND COORDINATION

CHAPTER 4

CONSULTATION AND COORDINATION

INTRODUCTION

This chapter discusses consultation and coordination that occurred during preparation of the Draft EIS. The discussion includes those contacts made during the inventory process in the San Juan Planning Unit, the development of the Proposed Action, and the writing of the DEIS.

PUBLIC CONSULTATION

On September 30, 1977, the Farmington Resource Area Office sent a general information letter to 50 ranch operators in the San Juan Planning Unit telling them of a public meeting to be held on October 13, 1977 in the old County Courthouse in Aztec. The purpose of the meeting was to brief the ranchers on the range inventory that would be conducted in the Planning Unit and the Grazing EIS that would be developed. Twenty-eight people attended this meeting.

The following year, on August 28, 1978, the Farmington Resource Area Office mailed out invitations to meetings at the San Juan County Court House in Aztec to discuss the progress of the range inventory and to review how inventory data would be used in the BLM planning system. Because of the number of people involved, identical meetings were scheduled for September 7, 1978 and September 12, 1978. A tour was scheduled on the day following each meeting for those interested in observing the procedures used in collecting inventory data. Ninety-seven ranchers and representatives of 3 government agencies were notified of the September 7 meeting; 103 affected individuals and interest groups were notified of the September 12 meeting. The attendance roster was signed by 4 people at the first meeting and by 19 people at the second meeting.

On October 16, 1978, a letter was sent from the Farmington Resource Area Office to advise area ranchers and other interest groups of changes in regulations and policies and to request comments.

On May 3, 1979, a letter from the Farmington Resource Area Office was sent to various organizations representing principal users of public lands in the San Juan Planning Unit. A representative from each group was requested to meet with the BLM to ensure that all resource values would be adequately considered in the Management Framework Plan (MFP) for the Planning Unit. A followup letter, dated June 22, 1979, established June 27 and June 28 as dates for work group meetings.

On June 28, 1979, a press release was issued to the news media in the Farmington-Albuquerque area. This release announced an open house at the Farmington Resource Area Office on July 5, 1979 to provide an opportunity for the public to review and comment on the land use planning for the San Juan Planning Unit. On July 2, 1979, a followup letter concerning this open house was sent to approximately 550 individuals and organizations. This letter summarized the more critical issues that had been identified in the planning system for range, lands, wildlife, watershed, minerals, recreation, and vegetation.

Around July 1, 1979, letters were sent by the Farmington Resource Area Office to all ranchers announcing that inventory data had been compiled and initial recommendations developed. The ranch operators were invited to come to the Farmington Resource Area Office for individual discussions on the proposed changes. Thirty-eight ranchers visited between July 5 and September 5, 1979, in response to this request.

On July 30, 1979, the Albuquerque District Office issued a press release stating that an EIS would be prepared in connection with range use and management on 970,000 acres of public land in northwestern New Mexico. It was stated that a public meeting would be held at the San Juan College Theater in Farmington on August 14, 1979 for the purpose of determining the scope of the issues to be addressed in the EIS. This release was sent to six newspapers, ten radio stations, and five television stations serving the Albuquerque-Farmington area. This same information was contained in a letter sent out on August 1, 1979 by the Albuquerque District Office to all ranchers and interested agencies, groups, universities, and individuals. Sixteen individuals representing ranching, recreation, and mining interests attended the scheduled meeting and both oral and written comments were received.

The EIS team from Albuquerque toured the Planning Unit on August 14-16, 1979. The purpose of this trip was to familiarize the team with the terrain, vegetation types, existing range facilities, and vegetation treatment areas in the Planning Unit.

AGENCY COORDINATION

Required Agency Contacts

On October 31, 1979, informal consultations with the U.S. Fish and Wildlife Service were initiated by the EIS team wildlife biologist in cooperation with the BLM New Mexico State Office.

The DEIS will be submitted to the State Historic Preservation Officer to serve as the preliminary case report for Section 106, National Historic Preservation Act of 1966, as amended (16 U.S.C. 470).

Informal Contacts

The Farmington Resource Area Manager has had periodic contacts with representatives of various federal, state, and local agencies, and private organizations in developing proposed grazing systems, range developments, and vegetation treatment projects.

Both the Farmington Resource Area Office and the EIS team wildlife biologist have maintained frequent contact with New Mexico Department of Game and Fish representatives through the inventory process, development of the proposal, and preparation of the DEIS.

The contractor, Harbridge House, Inc., held informal consultations with several federal, state, local, and university groups in developing the social and economic conditions sections of the DEIS.

REVIEW OF THE DEIS

Comments on the DEIS are being requested from the governmental agencies, private groups, and individuals listed below.

Federal Government

Agencies

Department of Agriculture
- Agricultural Stabilization and Conservation Service
- Farmers Home Administration
- Soil Conservation Service

Department of Commerce
- Economic Development Administration

Department of Interior
- Bureau of Indian Affairs
  - Albuquerque Area
  - Eastern Navajo Agency
  - Navajo Area
- Heritage Conservation & Recreation Service
- National Park Service
- Water & Power Resources Service
- U. S. Fish & Wildlife Service
- U. S. Geological Survey

Department of Transportation
- Federal Highway Administration

Officials

Senator Pete V. Domenici

Senator Harrison Schmitt

Representative Manuel Lujan, Jr.

Representative Harold Runnels

Tribal Government

Navajo Nation -- Chairman Peter MacDonald

State Government

State of New Mexico Agencies

Commerce & Industry Department
- Economic Development Division

Department of Finance & Administration

Educational Finance & Cultural Affairs Department
- Historic Preservation Bureau

Energy & Minerals Department

Health & Environmental Department
- Environmental Improvement Division

Highway Department

Natural Resources Department
- Department of Game & Fish
- Soil & Water Conservation Division
- Water Resources Division

State Clearinghouse

State Land Office

Officials

Governor Bruce King

Senator Jack Morgan

Senator Christine Donistore

Representative D. Polk Brown

Representative Jerry Sandel

Representative Boyd Scott

Local Government

San Juan Regional Committee

County Commission
Rio Arriba County
San Juan County

San Juan County Extension Agent

San Juan County Planning Department

San Juan Soil & Water Conservation District

Mayor of Aztec

Mayor of Bloomfield

Mayor of Farmington

Private Groups

Special Interest Groups

Ada County Fish and Game League

National Council of Public Lands Users

National Wildlife Federation

Natural Resources Defense Council

Nevada Outdoor Recreation Association

New Mexico Archaeological Society

New Mexico Cattle Growers' Association

New Mexico Farm & Livestock Bureau

Oregon Environmental Council

San Juan Archery Club

San Juan County Museum Association

San Juan Livestock Growers' Association

San Juan Wildlife Federation

Society for Range Management

Sierra Club

Wildlife Management Institute

Universities

New Mexico State University
Cooperative Extension Service
Cultural Resource Management Program
Range Improvement Task Force

Companies

El Paso Natural Gas Company

Gas Company of New Mexico

Northwest Pipeline Corporation

Individuals

Ranch operators in the San Juan
Planning Unit

HEARINGS

Public hearings will be held on this Draft Environmental Impact Statement. Notice for dates and times for these hearings will be announced in advance to the news media and in the Federal Register.

CONTRIBUTORS TO THE DOCUMENT

The following listing includes contributors to this DEIS, including report writers, preparers of the background documents, and support personnel.

List of Preparers

Report Writers

Name	Assignment	Education	Experience
John C. Arwood	Livestock and Wild Horses	BS Range Management Animal Husbandry Agricultural Economics	BLM - 11 yrs. Range Conservationist
Tom Bargsten	Soils	BS Soil Science	BLM - 4 yrs. SCS - 11 yrs. Soil Scientist
John E. Bristol	Visual Resource Recreation Wilderness Graphics Coordinator	BS Landscape Architecture	BLM - 3 yrs. USFS - 6 yrs. Landscape Architect
Richard A. Diener	Wildlife Biologist	Ph.D. Zoology	BLM - 3 yrs. Wildlife Biologist NMFS/NOAA - 14 yrs. Fisheries Biologist
Richard Fagan	Chief, Planning and Environmental Coordination Staff	MS Range Science BS Forest Range Management	BLM - 6 mos. Chief, Planning and Environmental Coordination Staff, 5 yrs. Area Manager
Donald R. Floding	Socioeconomic Conditions and Land Use	BS Urban Planning MS Town and Regional Planning	BLM - 1 yr. Community Planner Local Government - 9 yrs. Planning Director
Jim Fogg	Hydrology	BS Environmental Biology MS Watershed	BLM - 2 yrs. USFS - 1 yr. Hydrologist
Malcolm Huckleberry	Forester	BS Forestry MS Natural Resource Adm.	BLM - $3\frac{1}{2}$ yrs. BIA - $1\frac{1}{2}$ yrs. Forester
Samuel A. Lowance	Climate, Air Quality, Vegetation	Ph.D. Agronomy (Weed Science)	BLM - 3 yrs. Conservation Agronomist USDA-ARS - 10 yrs. Agronomist (Research Assistant)
Steven R. Marcus	Geologist	MS Geology	BLM - 6 yrs. Geologist
Coleman R. Robison	Paleontology	Ph.D. Paleobotany	BLM - 1 yr. Paleobotanist
Ralph Sena	Team Leader	BUS	BLM - 3 yrs. Environmental Coordinator
Sarah W. Spurrier	Writer/Editor	BA Psychology	BLM - $2\frac{1}{2}$ yrs. Writer/Editor
Carol Thompson	Archaeologist	BA Anthropology	BLM - 6 mos. Archaeologist BIA - 11 yrs. Teacher, Anthropology

List of Preparers (Cont'd)

Background Preparers

The individuals listed here helped in compiling the basic data used in preparing the EIS. They had input into consultation, coordination, and public involvement efforts for inventorying and planning in the San Juan Planning Unit prior to the writing of the EIS.

Name	Experience (BLM)	Name	Experience (BLM)
Fred Anderson	6 yrs. Geologist	Timothy Kreager	1 yr. Range Conservationist
Virgil Anderson	2 yrs. Range Conservationist	J. Roderick Lister	2 yrs. Natural Resource Specialist
Tom Bargsten	4 yrs. Soil Scientist	Monte McClendon	1 yr. Range Conservationist
Bruce Bash	7 yrs. Realty Specialist	Angela Markovich	6 yrs. Realty Specialist
Willis Bird	9 yrs. Wildlife Biologist	Robert Moore	4 yrs. Natural Resource Specialist
Charles Boyer	7 yrs. Lands, Range, Comm. Plan.	Randy Morrison	$3^1/_2$ yrs. District Archeologist
Douglas Burger	$2^1/_2$ yrs. Realty Specialist	Clem Parkin	2 yrs. Range Conservationist
Bob Calkins	11 yrs. Area Manager	Ralph Pericoli	1 yr. Range Conservationist
Carl Dallas	4 yrs. Engineering Technician	Ben Phillips	2 yrs. Archeologist
Brantley Dickey	1 yr. Range Conservationist	Keith Rigby	3 yrs. District Paleontologist
Ilyse Ferraiuolo	2 yrs. Range Conservationist	Dick Speegle	4 yrs. Recreation Planner
Steven Friedman	1 yr. Range Conservationist	Edward Spence	1 yr. Range Conservationist
Ray Graham	19 yrs. Civil Engineering Technician	Jack Spears	$2^1/_2$ yrs. Range Conservationist
Victor Grizzle	1 yr. Range Conservationist	Dwain Vincent	12 yrs. Range Conservationist
Kent Hamilton	3 yrs. Economist	Bob Vlahos	6 yrs. Range Conservationist
Barry Hunt	1 yr. Range Conservationist	Jon Weddle	9 yrs. Range Conservationist
Robert Jones	1 yr. Range Conservationist	Craig Wilcox	1 yr. Range Technician
Phillip Kirk	8 yrs. Area Manager		

List of Preparers (Concluded)

Support Personnel

Name	Experience (BLM)	Name	Experience (BLM)
Harry DeLong	1 yr. Cartographic Aid	Eleanor Pfeifer	$2^{1}/_{2}$ yrs. Office Manager
Myrna Finke	6 mos. Cartographic Aid	Lulu Smith	2 yrs. Clerk Typist
Amy Lehner	5 mos. Clerk Typist	Marilyn Umbarger	7 mos. Clerk Typist
Jeffery S. Nighbert	1 yr. District Cartographer	Eutimia Zubia	3 mos. Clerk Typist
Jean Noling	3 mos. Clerk Typist		

APPENDICES

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APPENDIX A

EVOLUTION OF THE PROPOSED ACTION THROUGH THE MFP PROCESS

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EVOLUTION OF THE PROPOSED ACTION THROUGH THE MFP PROCESS

Livestock MFP I Recommendations	Other Resource MFP I Recommendations That Conflicted With Range Recommendations	MFP I Conflicts	MFP II Recommendations	Rationale For MFP II Recommendations	Trade-Offs
I. Provide 69,335 AUMs of forage for livestock grazing at the present time and increase this figure to 90,311 AUMs by the year 2000.					
I.A. Develop transportation system to serve the needs of the range management program. Inventory existing routes to determine their adequacy and the needs for additional legal access.	Wildlife New access to certain areas identified as peregrine falcon, or bald eagle habitat, or to within 75' of streambanks, or across identified wetlands would make protection of these areas more difficult.	New roads would remove potential AUMs from use by livestock, wildlife and wild horses.	Inventory existing routes to determine adequacy and needs for legal access for the Range Management Program as follows: 1. Incorporate a legal access identification and needs sheet in all case files for range allotments in Farmington Resource Area Office. 2. Incoporate a legal access needs section in existing and proposed Allotment Management Plans.	Modified recommendation to accomplish a portion of the inventory of necessary legal access thru the day-to-day range management program. With increased range studies and supervision following the EIS for grazing, it would appear this recommendation could be accomplished with a limited duplication of effort. A transportation plan will be developed by the lands activity and was deleted from this recommendation.	New roads would reduce number of AUMs available over the long term.
I.B. All fires under three acres within the pinyon-juniper vegetation type are to burn uncontrolled unless life and/or property are threatened.	Forest Products 1. Fire support in salvage logging. 2. Utilization of wood products associated with roads, drill pads, and rights-of-way and indicates a need for fire support. 3. Fire support for designated cutting areas. 4. Fire support in management of woodland products program.	Possible loss of forage for livestock and wildlife and wildlife habitat that may be classified as critical in certain areas.	By FY 1986 include in the Farmington Resource Area portion of the Albuquerque District fire plan an overlay depicting "prescription burning" areas within the San Juan Planning Unit. Identified "prescription burning" areas will be developed in accordance with MFP planning decisions, and EIA and EPA requirements.	Modified recommendation to establish a time frame and means of accomplishing the RM-1.4 recommendation. This identification of areas has been standard procedure in some district fire plans.	Would reduce AUMs and habitat available to wildlife in the short term and would open up stands of dense pinyon-juniper in the long term.

Livestock MFP I Recommendations	Other Resource MFP I Recommendations That Conflicted With Range Recommendations	MFP I Conflicts	MFP II Recommendations	Rationale For MFP II Recommendations	Trade-Offs
I.B. (Cont'd)	Watershed Big sagebrush control requires fire support.	Possible loss of habitat for certain species of wildlife.			
	Wildlife Mechanical manipulations of pinyon-juniper resource fire control.	Possible loss of habitat for certain species of wildlife.			
I.C. Implement the following actions in the Planning Unit:			Prepare EIS with the following allocations:		
I.C.1. Allocate 75,410 AUMs of forage for active use at the present time. Increase active use to a projected goal of 107,217 AUMs by the year 2000.	Wild horses Reserve 96 AUMs of forage for current horse populations and 276 AUMs by the year 2000.	Would utilize AUMs that could be allotted to livestock.	Wild horses Reserve 276 AUMs of forage for current horse populations and 276 AUMs by the year 2000.	Would adjust livestock grazing use to current forage production and provide forage for horse populations throughout their natural range.	None.
	Livestock Reserve 69,335 AUMs of forage at present grazing levels and 90,311 AUMs by the year 2000.	May require reduction in livestock grazing on seasonal or full-time basis in localized areas.	Livestock Reserve 69,335 AUMs of forage at present grazing levels and 90,311 AUMs by the year 2000.	Would adjust livestock grazing use to current forage production.	Localized adjustments in present active qualifications in both the short and long terms.
	Wildlife Reserve 5,799 AUMs of forage at present grazing levels and 16,630 AUMs for the following wildlife populations.	May require reduction in livestock grazing in localized areas.	Wildlife Reserve 5,799 AUMs of forage at present levels and 16,630 AUMs by the year 2000.	Would allow for maintenance of increased big game herds and still allow for livestock use as adjusted above.	
	a. Present No. of Animals (1980): Mule Deer-- 1,286 yearlong, 1,691 winter; Elk--40; Antelope--186; Barbary sheep-204.		a. Proposed No. of Animals (1980): Mule Deer-- 1,286 yearlong, 1,691 winter; Elk--40; Antelope--186; Barbary sheep--204.		

Livestock MFP I Recommendations	Other Resource MFP I Recommendations That Conflicted With Range Recommendations	MFP I Conflicts	MFP II Recommendations	Rationale For MFP II Recommendations	Trade-Offs
I.C.1. (Cont'd)	b. Projected No. of Animals (Year 2000): Mule deer-- 2,591 yearlong, 3,416 winter; Elk--80; Antelope--373; Barbary sheep--429.		b. Projected No. of Animals (Year 2000): Mule deer-- 2,591 yearlong, 3,416 winter; Elk--80; Antelope--373; Barbary sheep--429.		
I.C.2. Conduct utilization, actual use, condition and trend, and production studies to monitor the condition of vegetation resources. All activation of portion of suspended non-use will be used on range studies. Determine access needs on the allotments.	Wild horses Provide 96 initial and 276 AUMs by the year 2000. Wildlife Provide 5,799 initial and 16,630 AUMs of forage for big game species of wildlife by the year 2000.	Continued competition of grazing ungulates until necessary livestock adjustments are made.	Adjustments to be made as needed after approval of Final EIS. During this period, conduct necessary studies to verify allotment forage production.	Would lessen impact on allottees. The studies would likely fill data gaps that exist in management base data.	Possible confined livestock/wildlife forage competition during adjustment period.
I.C.3. Implement a range management program which will ensure all areas of public land use rest from livestock grazing at least once every 3 years during the spring (Apr. 1 - May 31) and summer (Jul. 15 - Sept. 15) growing seasons. Based on BLM initiative, these units are identified by number priority for grazing program development.	Wild horses Restrict grazing (spring) by livestock within the wild horse range. Watershed Restrict livestock grazing during the critical period of spring green-up and wet soil conditions.	Would reduce or restrict livestock during spring on horse use areas. Would reduce or eliminate livestock grazing on most allotments.	Accept MFP I livestock recommendations. Accept MFP I livestock recommendations.	Minimum rest requirements would provide for the physiological needs of forage plants, protect soil, and reduce competition of grazing ungulates during initial green-up periods.	None.

Livestock MFP I Recommendations	Other Resource MFP I Recommendations That Conflicted With Range Recommendations	MFP I Conflicts	MFP II Recommendations	Rationale For MFP II Recommendations	Trade-Offs
I.C.4. Initiate as a minimum the following improvement practices with rancher consultation and coordination, consistent with BLM planning decisions. These include:					
Waters 7 Spring Developments 15 Water Wells 2 Catchments 18 Miles of Pipeline 33 Drinking Tubs 7 Storage Tanks 9 Reservoirs	Wildlife Develop 25 new waters by 1990 to improve wildlife distribution.	Development of livestock water in these areas would increase wildlife/ livestock competition.	Accept MFP I livestock and MFP I wildlife recommendations.	Improved livestock distribution would generally benefit wildlife. Wildlife waters can be developed in areas unsuitable to livestock.	
	Consider wildlife needs in all water developments.	No conflict, except for added cost of development.	Accept MFP I livestock recommendation with stipulations of:		
			a. Fence the source of all spring developments and pipe water.	Provide protection to source and development of small riparian zone.	None.
			b. Where practical, fence $2\frac{1}{2}$- to 5-acre plots on watershed above reservoirs.	Would provide protection for vegetation, thus enhancing wildlife habitat (i.e., possible waterfowl nesting).	Additional development costs.
			c. Provide wildlife escape ramps in all water troughs.	Bureau policy.	None.
9 miles of fence	Wildlife Fence construction in wildlife migration routes to comply with Bureau Manual 1737.	Fences could impede wildlife movements and cause wildlife losses.	Accept wildlife recommendation.	Bureau policy.	None
	Cultural Values Cultural examination of all projects.	Possible damage to cultural sites.	Cultural clearance prior to construction.	Assure no cultural sites will be damaged.	Relocation of fence if cultural site is found.

Livestock MFP I Recommendations	Other Resource MFP I Recommendations That Conflicted With Range Recommendations	MFP I Conflicts	MFP II Recommendations	Rationale For MFP II Recommendations	Trade-Offs
I.C.4. (Cont'd)					
Treatments (Total--54,119 acres) Sagebrush (120 acres seed only; 29,420 acres chain only; 16,305 acres chain and seed; 6,914 acres plow and seed) Pinyon-juniper (1,360 acres chain and seed).	Wild horses - Wildlife Maintain protective cover for horses and wildlife in treated areas.	Could reduce cover needs for wild horses and wildlife.	All land treatment activities will be initiated in areas that have completed wildlife habitat management plans, proposed intensive livestock grazing programs, or identified watershed improvement needs. All projects will be designed to maximize multiple resource benefits derived from treatment.	Assures suitable cover for wild horses and wildlife. Additional forage would be provided livestock as well as wildlife and wild horses. Additional edge will be assured for these species.	None.
	No treatment in critical wildlife habitat.	Possible reduction or loss of critical wildlife habitat.	Treatments will be accomplished after site-specific impacts are identified and necessary mitigating measures are applied.	Would provide protection for wildlife and upland game and non-game bird species.	None.
	No disturbance within 1/4 mile of active raptor nest.	Could alter habitat around nesting site and destroy snags used for nesting or perching.	No land treatment within 1/4 mile of active raptor nest that would permanently alter or adversely impact habitat. Preserve all snags within 1/2 mile of nesting site.	Would assure protection of raptor habitat.	
	Watershed Restrict surface-disturbing activities (such as treatments and livestock) on about 82,940 acres of public land.	Treatments could decrease soil erosion.	Modified recommendation includes evaluating changes in treatment areas and policies in livestock adjustments.	Changes and adjustments in treatments on livestock use will follow EIS completion.	None.
	Recreation Manage VRM Class II lands under VRM II classification.	Treatments could detract from scenic quality.	Treatments to comply with VRM II Classification.	Will allow treatments in VRM II areas that do not detract from scenic quality.	Decrease of some areas suitable for treatment. Increased costs in design, layout, and treatment.

Livestock MFP I Recommendations	Other Resource MFP I Recommendations That Conflicted With Range Recommendations	MFP I Conflicts	MFP II Recommendations	Rationale For MFP II Recommendations	Trade-Offs
I.C.4. (Cont'd)	Cultural Values Cultural examination prior to treatment.	Possible damage to cultural sites.	Treatments to receive cultural clearance and necessary mitigating measures prior to treatment.	Assure that no cultural site will be damaged.	Relocation or possible reduction in proposed treatment areas.
	Minerals Leases of oil and gas, and coal.	Treatments could be lost if area were developed for minerals.	Modify or eliminate treatments in areas of intensive mineral development.	Changes in treatments will be made after completion of EIS.	Reduction of about 5,000 acres proposed for treatment.
I.C.5. All increases in allocatable livestock and wildlife forage brought about by the management efforts of the ranch operator or through the cooperative efforts of the rancher and the BLM will be allocated to the grazing units. II. Protect and manage the wild and free-roaming horses in the Rosa Community Allotment by October, 1981.	None.	None.	Accept MFP I livestock recommendation.	Allotment management provisions would provide for the biological needs of forage plants and reduce grazing ungulate competition during critical green-up periods and during summer wet seasons.	None identified.
II.A. Allocate 420 AUMs of forage for the present wild horse population.	Wildlife 1. The use of this land for horses conflicts with the requisition of a Rosa tract for wildlife seasonal range. 2. Conflicts with a reduction of livestock during winter months. 3. Conflicts with reducing pressures on a yearlong range. 4. Conflicts with ACEC area designation in Rosa area for big game range.	Continued competition between grazing ungulates until livestock adjustments can be made.	During FY 1981 provide 276 AUMs of forage for wild horses on Rosa Allotment as follows: 1. Allocate 96 AUMs of forage for 8 wild horses on Carracas Mesa Pasture. 2. Allocate 180 AUMs of forage for 15 wild horses on Laguna Seca Pasture.	A maximum of 276 AUMs would allow for fluctuations in number and would be consistent with horse numbers in the area at the time of the Wild Horse and Burro Act. Would also be consistent with allocatable forage identified for livestock, wildlife, and wild horses in the Rosa Allotment.	None identified.

Livestock MFP I Recommendations	Other Resource MFP I Recommendations That Conflicted With Range Recommendations	MFP I Conflicts	MFP II Recommendations	Rationale For MFP II Recommendations	Trade-Offs
II.A. (Cont'd)	5. Removal of horses from range in direct conflict. 6. Use of treated sagebrush and pinyon-juniper area for wildlife is in conflict with horses. Minerals Issuance of oil and gas leases conflicts with horse range. Forest Products Ponderosa salvage cuts, removal of wood products associated with oil and gas development, and possible establishment of wood cutting areas all could conflict with vegetative resources identified for livestock, wildlife, and wild horses. Watershed Wild horses grazing conflict with restrictions of surface-disturbing activities in portions of restricted watershed of Rosa Community.				

Livestock MFP I Recommendations	Other Resource MFP I Recommendations That Conflicted With Range Recommendations	MFP I Conflicts	MFP II Recommendations	Rationale For MFP II Recommendations	Trade-Offs
II.B. Remove all horses in excess of the 35 inventoried December 5, 1978 until an optimum number for the area is established.	Same as above (II.A.).	Same as above (II.A.).	Initiate action to remove all horses in excess of 23 animals during FY 1980. Maintain 23 horses on Allotment 5058 until an optimum number of horses for this area can be established.	Recommendation modified to include horse numbers consistent with forage allocations for all grazing animals. Establish a beginning time frame to aid in AMP development This action will be the initial step in achieving management of wild horse numbers on public lands in the Rosa Allotment.	Loss of livestock and wildlife AUMs consumed by wild horses.
II.C. Develop a cooperative agreement with the Carson National Forest for the protection and administration of these horses.	Same as II.A.	Wild horses in the Rosa Community mix with horse bands on adjacent lands. Wildlife and grazing conflicts associated with horse herd expansion would apply similarly to Forest Service land and public lands.	Initiate action to develop a cooperative agreement between the BLM Albuquerque District and the Carson National Forest for the protection, gathering and management of wild horses occurring on contiguous Forest Service and public lands during FY 1981.	The opportunity exists through a cooperative agreement and additional BLM funding for joint wild horse management. Operation under a cooperative agreement would alleviate duplication of effort by the federal agencies.	Loss of livestock and wildlife AUMs which will be consumed by wild horses.

APPENDIX B

RANGELAND CONSULTATION POLICY

NEW MEXICO BUREAU OF LAND MANAGEMENT
RANGELAND CONSULTATION POLICY
SECTION 8 PL-95-514

Purpose: Section 8 of PL-95-514 specifically requires consultation, cooperation and coordination with lessees, permittees and landowners, the district grazing advisory boards and any state agencies, hereinafter referred to as the target group, involved in the development, revision or evaluation of allotment management plans. It is the intent of the Bureau of Land Management, New Mexico, to expand the concept of consultation, cooperation and coordination into all phases of the grazing program and, thus, compliment the congressional intent set forth in PL-95-514.

Introduction: The procedures apply specifically to the target group, but also apply to other interested publics such as the district advisory council, the New Mexico Range Improvement Task Force, and other interested parties, as well as other land administering agencies where applicable. These procedures consist of seven phases and are intended to ensure compliance with Section 8 of PL-95-514. These phases are:

I. Preplanning.

II. Inventory and Inventory Related Studies.

III. Development of Resource Management Plan and Environmental Impact Statement.

IV. Rangeland Management Program Documents Following Grazing Environmental Statements.

V. Livestock Adjustments, Grazing Systems Allotment Management Plans, Revisions and or Evaluation.

VI. Interim Range Studies Prior to Grazing Systems and or AMP Implementation. (Refer to NMSO Manual Supplement on Interim Studies.)

VII. Documentation.

Phase I
Preplanning

A. The District Manager or his representative will contact the target group at the beginning of the preplanning analysis to request their input into the identification of issues. Contacts will be made by certified mail to ensure proper documentation.

B. The District Manager or his representative will then meet with the target group or informally on a one-to-one basis with each group and each owner-operator to insure that their ideas and concerns are considered.

C. Following steps A and B, all affected parties will be furnished, by certified mail, a summary of issues for their review and comment before finalization. A final revision will be mailed to each party.

Phase II
Inventory and Studies Related to Inventories

A. The District Manager or his representative will notify the target group, by certified mail, of the inventories and inventory related studies to be conducted with a proposed time frame.

B. Prior to the initiation of each inventory or inventory related studies, the target group will be notified, by certified mail, of the inventories and inventory related study.

C. Prior to the beginning of an inventory, or inventory related studies, the District Manager or his representative will notify the target group, by certified mail, to request their participation.

D. All inventory and/or study teams will stop at the ranch headquarters on the first day of the inventory or study. If the allottee is absent, a note will be left indicating the work being done and the locations of each crew. (See Section VII, Documentation.)

Phase III MFP-RMP
EIS Development

A. Consultation and coordination with the target group, along with interested publics, is required (see 43 CFR 1601.4) and will be carried out as stated in 43 CFR 1601.3, public participation.

B. The District Manager or his representative shall make contacts with the target group to request their involvement during the allotment analysis process (II.C. and D.). The results of the various inventories and studies, i.e., forage availability, proposed livestock adjustments, wildlife habitat needs, socio-economic needs, watershed needs, etc., will be discussed with these participants during this contact. The allotment analysis review will include discussion on the needs for AMP vs. no AMP, design of grazing systems, locating range improvements and land treatment potential, etc.

Phase IV
Rangeland Management Program Document

The District Manager or his representative shall make contact with State agencies, district grazing advisory boards and the New Mexico Range Improvement Task Force within 90 days following the filing of a final ES to review the draft Rangeland Management Program Document. (See Enclosure 1-1 and 1-2 for the outline of a typical program decision document.) The thrust of this phase will be to seek mutual agreement on the Rangeland Management Program Document. In the event of disagreements, further consultation may be necessary with the district advisory council. It is essential that this phase be conducted in an atmosphere of mutual trust, coordination and consultation since all subsequent range related actions will hinge on this document.

Phase V
Livestock Adjustments, Grazing Systems, Allotment Management Plans, Revision and/or Evaluation

A. Prior to the implementation of specific livestock adjustments, AMP's, grazing system or range improvement programs, the target group will be contacted by certified mail, asking them to what extent they wish to be involved.

B. Individual allottees and the State Land Commissioner will be contacted prior to each adjustment of grazing use and in the development, revision or evaluation of each AMP or other livestock management considerations.

C. The target group will be periodically informed and will be invited to review the progress at any time.

Phase VI
Interim Range Studies Prior to Grazing Systems AMP Implementation

Contact will be made with the target group informing them of the intent and procedure to be used in establishing interim range studies. Use the contact procedure identified in II.C. and D.

Phase VII
Documentation

A. Documentation of all contacts whether by mail, in person, by telephone, etc., is mandatory. Documentation shall be kept in chronological order and properly filed.

B. During inventories or studies, the area manager will maintain a daily log or diary indicating pertinent information, such as who worked where, hours spent on quality control with each team, contact with the public, etc.

C. All information is available at the district office for review. Summary of study data will be made available upon request.

APPENDIX C

METHODOLOGIES

APPENDIX C-1

RANGE SURVEY AND GRAZING CAPACITY METHODOLOGY

The procedures and methodologies used to determine the amount of annual forage production (grazing capacity) available for grazing animals can be broken down into four major components:

1) Collection of data necessary to determine the cover of each forage-producing species within each vegetation mapping unit;

2) Studies to determine the relationship between cover and total annual production;

3) Development of proper use factors; and

4) Establishing criteria to determine the suitability of each vegetation mapping unit for domestic livestock grazing.

Collection of Data

Collection of data necessary to determine the cover of forage-producing species within each mapping unit was begun in 1977. This consisted of delineating the vegetation mapping units within each pasture of each grazing allotment, locating each of these units on aerial photographs, calculating acreages of the units by land status, and sampling each of these areas to determine the cover value of forage-producing species. The vegetation mapping units used are relatively homogenous, having similar plant composition and density.

The sampling consisted of: (a) determining the locations for transects to represent the vegetation mapping units; (b) gathering cover data from plots 9 square feet in area and spaced approximately 60 feet apart along the transects; and (c) recording the cover data. The number of plots used to sample a vegetation mapping unit depended primarily on the complexity of the unit. A minimum of ten plots were used to sample each mapping unit.

The percent cover of each perennial forage species within each plot was estimated and recorded. These data were later used along with the data from studies (described below) and proper use factors to determine the total amount of perennial vegetation available for livestock and wildlife use.

Studies

Studies to determine the relationship between cover and production were conducted on the major forage species within the planning unit. These studies are continuing.

The first study, which dealt with the major grass species, was begun in the spring of 1976. The study consists of the establishment of 3' x 3' plots from which data is collected. Plot locations were selected to sample the eight major vegetation subtypes in the four rainfall belts. Major grass species common to the planning unit are sampled at each plot; each plot location is clipped prior to the start of the growing season to remove the previous year's foliage. Plots are then staked and wire mesh cages are placed over them to prevent livestock use. A rain gauge is attached to each cage and is read at the end of June, the middle of August, and the end of October. The cages are left in place until the end of the growing season (generally mid- or late October). At this time the cages are removed and the data collected. The basal cover of each forage-producing species is estimated and recorded as percent of ground cover. The current year's growth is then clipped, air dried, and weighed. Using the percent basal cover and the dry weight of the clipped material, the pounds-per-acre productivity of each species totally occupying (100% cover) the plot is calculated.

The second study was conducted in the fall of 1978 to determine the same information for various shrub species; again, the sampling area was stratified by the four rainfall belts. Five sampling locations were selected for each species occurring in each ranfall belt. Two locations had a north-facing slope, two had a south-facing slope, and one had little or no slope. At each location, five plants were sampled. The first plant sampled was selected arbitrarily and the remaining four plants selected using the nearest-neighbor method. This sampling scheme yielded a total of 25 samples for each species. For all samples, the following information was recorded: percent crown cover, total number of leaders, dry weight for ten randomly selected leaders, and individual lengths of the same ten leaders. Percent crown cover was determined by using a 3' x 3' sampling frame. The total number of leaders within the sampling frame was counted, and the subsample of ten leaders was used to determine average leader length and to establish a mean weight for the leaders. This information was then used to calculate the total amount of production, expressed in pounds per acre at 100% cover for all species.

The results of these two studies were then used in conjunction with data from actual transect sheets for each vegetation mapping unit to determine the total amount of forage being produced annually.

Development of Proper Use Factors

A proper use factor (PUF) is an index to the amount of grazing use by weight that can be made of a forage species without affecting the annual production of the plant. Certain forage species are preferred by grazing animals above others; therefore, the PUF varies by species and type of livestock. The PUFs utilized in this planning unit were determined by comparing four sets of information:

1) Past historical PUFs used in the BLM Albuquerque District,

2) Field observations,

3) PUFs used by other agencies and departments located near the planning unit, and

4) Two years of microhistological analysis conducted by Colorado State University for the BLM.

This data was correlated and a PUF for each species by herbivore was determined.

Range Suitability for Livestock Grazing

Before calculating grazing capacities for individual allotments, all vegetation mapping units in each allotment were designated as either suitable or unsuitable for domestic livestock grazing.

The criteria used to determine suitability were designed to protect suitable areas from possible excess use. This was done by eliminating the forage being produced on areas unsuitable for livestock grazing from the total calculations of grazing capacity. Three criteria were used in the determination of unsuitable areas:

1) Areas which require more than 32 acres to produce one AUM of forage were classified as unsuitable because of the scarcity of forage;

2) Areas which had a slope greater than 50 percent were classified as unsuitable because of excessive slope; and

3) Areas which had a soil surface factor of greater than 60 were classified as unsuitable because of excessive erosion hazard. (Many of the areas unsuitable for livestock grazing because of excessive slope provide suitable wildlife habitat, and a portion of allocations to wildlife were made from these areas.)

Example Calculation:

As an example of the grazing capacity calculations, data and calculations from Four Mile Mesa allotment (number 5102) are shown. Details of calculations to determine the production of blue grama growing in the sagebrush vegetation type (041) are shown.

In the sagebrush type in this allotment ten plots were sampled. The data from these plots are shown in the table entitled "FIELD DATA RECORD FOR PERCENT COVER". These data show the average cover of blue grama to be 0.35 percent.

APPENDIX C-1 (Cont'd)

FIELD DATA RECORD FOR PERCENT COVER

Allotment Four Mile Mesa

Sec._____T._____R._____Veg. type 041

Date_____ Observer_____

Species[a/]

Plot	Artr	Hija	Agcr	Bogr
1	5.0			
2	22.5			
3	--	.45		
4	8.5	.1	.025	.75
5	21.0	.6	--	.4
6	9.0	.55	.05	.25
7	13.0	--	--	.6
8	--	.6	.05	.7
9	19.0	--	--	.35
10	9.0	.2	--	.45
Total	107.0	2.5	.125	3.5
Average % Cover	10.7	.25	.0125	.35

Source: Allotment Files, Farmington Area Office, BLM.

Total by Species ÷ No. of Plots = % Cover

Notes: [a/] Artr = big sagebrush
Hija = galleta
Agcr = crested wheatgrass
Bogr = blue grama

There were two plots in the studies which represented the rainfall belt - vegetation type-forage species combination being shown in these calculations. Data collected from these plots are shown below.

	Plot A		Plot B	
Year	Percent Cover	Clipped Wt. (gms)	Percent Cover	Clipped Wt. (gms)
1976	6.00	86.6		
1977	3.10	18.7	0.80	7.99
1978	1.60	16.78	1.20	9.75

Calculations were then made using the following formulae:

$$\frac{\dfrac{\text{clipped wt. (grams)}}{\text{9 square feet per plot}} \quad \dfrac{\text{43560 (square feet per acre)}}{\text{454 (grams per pound)}}}{}$$

Pounds Per Acre (of Sample)

$$\frac{\text{Pounds per Acre (of sample)}}{\text{Percent Cover (from sample plot)}} \quad \frac{X}{100}$$

Where x is the estimated value of blue grama production at 100 percent cover. For Plot A in 1976 the calculations would be as follows:

$$\frac{\frac{86.6}{9} \times 43560}{454} = 923.01 \text{ pounds per acre sampled}$$

$$\frac{923.01}{6.00} = \frac{X}{100}$$

$$X = \frac{(923.01)\ (100)}{6}$$

$$= \frac{92301}{6} = 15{,}383.50 \text{ pounds per acre at 100 percent cover}$$

These calculations were repeated for all samples collected from both plots and the results were averaged. This average value for production at 100 percent ground cover came to 10,327 pounds per acre.

The procedure was repeated for each forage species measured in the sagebrush vegetation type of the Four Mile Mesa allotment and the results measured were entered on the "FIELD SHEET FOR DETERMINING ACRES/AUM".

The production per acre for each species measured was then calculated by the following formula:

$$\text{Average Production} = \text{Production at 100 Percent Cover} \times \frac{\text{Average Percent Cover}}{100}$$

For the blue grama in the sagebrush type these calculations were:

$$\text{Average Production} = (10{,}327)(0.0035) = 36.145 \text{ Pounds Per Acre}$$

These calculations were repeated for each forage producing species and the results were entered in the column marked "lbs./Acre for Type". These values were then multiplied by the appropriate proper use factor (P.U.F.) to determine the amount of usable forage per acre. For blue grama in the sagebrush type in the Four Mile Mesa allotment these calculations were:

(36.145 pounds per acre) X (.47 P.U.F.) = 16.99 Pounds Per Acre Useable Forage

These values were summed for all forage producing species. For the sagebrush type in this allotment the total usable forage per acre was calculated to be 45.68 pounds per acre.

The acres per AUM were then calculated by the following formula:

$$\text{Acres per AUM} = \frac{\text{Pounds of Forage Per AUM}}{\text{Pounds of Usable Forage Per Acre}}$$

For the sagebrush type in the Four Mile Mesa allotment is:

$$\text{Acres Per AUM} = \frac{720}{45.68} = 15.76 \text{ or } 16$$

This value was entered on "ALLOTMENT GRAZING CAPACITY" sheet and divided into the number of acres of the blue grama vegetation type to determine the AUMs of grazing capacity produced within this vegetation type.

FIELD SHEET FOR DETERMINING ACRES/AUM

ALLOTMENT Four Mile Mesa PASTURE --

VEGETATIVE TYPE 041 PPT. BELT 12-14

PREPARED BY _____ DATE _____

Species[a/]	lbs./Acre 100% Cover[b/]	Cover[c/]	lbs./Acre For Type	P.U.F.	Usable Forage
Artr	1,987	.1070	212.609	.05	10.63
Hija	16,033	.0025	40.083	.42	16.83
Agcr	25,667	.0001	2.567	.48	1.23
Bogr	10,327	.0035	36.145	.47	16.99
Total					45.68

Source: Allotment Files, Farmington Office, BLM.

$$\frac{720}{\text{lbs. of Forage/AUM}} \div \frac{45.68}{\text{Total lbs.}} = \frac{15.76}{\text{Acres/AUM}}$$

Notes: a/ Artr = big sagebrush
Hija = galleta
Agcr = crested wheatgrass
Bogr = blue grama

b/ From Form 3 and 4

c/ Basal cover for grasses; aerial protection for shrubs convert to decimal equivalent

The above procedure was then repeated for each vegetation type in the allotment, and the AUM values were summed to determine the grazing capacity of the allotment. For the Four Mile Mesa allotment, the total grazing capacity was calculated to be 204 AUMs of which 155 AUMs were from public lands. No areas of this allotment were determined to be unsuitable for domestic livestock grazing so all 155 AUMs were proposed to be allocated (145 AUMs to livestock and 10 AUMs to wildlife).

These procedures were repeated for each allotment. The grazing capacity of any areas determined to be unsuitable for domestic livestock was deducted in calculating proposed forage allocations. However, in some allotments forage produced from these areas was determined to be suitable for wildlife use and was allocated to wildlife.

ALLOTMENT GRAZING CAPACITY

Four Mile Mesa Allotment (5102)

TYPE	Ac/AUM	Public Lands		Private		State		Total	
		Ac	AUMs	Ac	AUMs	Ac	AUMs	Ac	AUMs
041	16	226	14	120	8	--		346	22
041-S	6	650	108	157	26	--		807	134
141	10	45	5	--	--	--		45	5
091	31	878	28	448	14	--		1,326	42
Total		1,799	155	693	47			2,524	203

Source: Allotment Files, Farmington Area Office, BLM.

APPENDIX C-2

RANGE CONDITION METHODOLOGY

Range condition is described in this EIS in terms of suitability for livestock grazing. Each allotment was evaluated by BLM personnel to determine the composition and density of desirable and less desirable livestock forage plants. Results for each allotment are available from BLM's Farmington Area Office files.

The soil surface factor (SSF), as computed through the use of Form 7310-12, is an expression of current erosion activity. Seven categories of surface features are considered by the fieldman in the examination of the area represented by each transect. These features are: soil movement, surface litter, surface rock, pedestalling, rills, flow patterns, and gullies. Both wind and water erosion are considered as applicable to each category. In the process of determining the SSF, the fieldman must consider the features as they represent the total area of the vegetative subtype, not just the area near the transect and soil pit.

Conditions are defined as follows:

Good condition: Composition is 40 percent or more of both desirable and intermediate species with at least 20 percent made up of desirable species with an SSF of less than 40.

Fair condition: Composition includes 15-39 percent of desirable and intermediate species with desirable species making up 5 or more percent and with an SSF of less than 60. Areas with 60 percent of intermediate species but less than 5 percent of the vegetation being made up of desirable species would also be in fair condition when the SSF is less than 60.

Poor condition: Composition or SSF values do not meet above criteria.

Source: BLM Instruction Memorandum No. 75-52, Change 1 of March 10, 1975.

APPENDIX C-3

METHODS FOR DETERMINING RANGE TREND INDICES

Range trend studies were conducted by methods described in BLM manuals 4412.22c and 4413.21C1. Generally, the methods used consisted of the following:

1) determining key areas in each pasture being studied,

2) locating study plots within the key areas and permanently marking these plots,

3) estimating the cover of live vegetation in each plot,

4) computing the composition of key species in the study plot,

5) counting the number of seedlings of key species in the study plot,

6) estimating the percentage of the ground surface area that is occupied by litter.

Using data collected from these studies, trend indices were computed. One index was computed using data collected at the time of study initiation, and additional indices were computed using data collected at the end of each grazing cycle. Indices were computed by adding:

a) composition of key species in percent,
b) cover of vegetation in percent,
c) seedlings of key species in numbers, and
d) litter of entire plot in percent.

The first index computed for a plot was set at 100, and additional indices computed for that plot were computed relative to the first.

Example calculations:

Parameter	Data At Study Initiation	Data After One Grazing Cycle
composition (key species)	13.5	15.5
cover (live vegetation)	15.7	16.0
seedlings (key species)	1.0	0.0
litter (entire plot)	3.5	4.5
Total	33.7	36.0
Index	100	107

$$\frac{33.7}{100} = \frac{36}{X}$$

$$X = \frac{(36)(100)}{33.7} = 107$$

For areas where indices computed after the initial one were below, equal to, or above the inital index the range trend was considered to be down, static, or upward; respectively.

APPENDIX C-4

METHODOLOGY USED FOR THE DETERMINATION OF FORAGE PRODUCTION GOALS

The forage production goals identified for each grazing allotment in the San Juan Management Framework Plan are estimated animal unit months which can be achieved from the public land portion of the allotment by the year 2000. These estimates are based upon the expected forage species' response to the identified rest periods and, where applicable, to the proposed vegetation treatment projects. The acreages of each vegetation type, the present proportion of the total vegetation complex consisting of forage producing species, and the potential production for the various vegetation types were all considered in this determination. Primary importance was placed upon attaining the current base property qualifications of each grazing allotment if it is anticipated this figure is attainable by the year 2000.

APPENDIX C-5

METHODS FOR ESTIMATING FUTURE VEGETATION COVER

Predictions of future vegetation cover values were estimates made by BLM personnel. These were made for total vegetation cover based on the following assumptions.

1) The vegetation cover on areas designated as steep and rocky or barren will not change. These areas are designated as unsuitable for domestic livestock grazing (BLM Planning Documents) because of steepness of slope and/or scarcity of forage production, and presently receive very limited use by livestock. It is not anticipated that the proposed action or any of the alternatives would affect this use to a degree which would result in vegetation cover changes.

2) The portion of the vegetation cover that is made up by the sagebrush, pinyon, or juniper components will not change except where vegetation treatments are conducted at a site where they are growing.

3) Changes in vegetation cover caused by vegetation treatments will be of the same magnitude as changes exhibited on similar areas that have received similar treatments in the past. When treatments are proposed for only a portion of a vegetation type, a weighted average was computed to cover for the whole vegetation mapping unit.

4) The cover of the total forage grass component will change at a rate similar to rates measured at the San Louis Watershed Study (USDA, 1972) when rest is initiated for both the proposed spring and summer rest periods. When only the proposed spring rest or the summer rest is initiated, the same rate of change is assumed for cool-season species or warm-season species, respectively. The cover of species, such as galleta, that exhibit both cool-season and warm-season characteristics was assumed to change at one-half that rate when only one rest period was initiated. (The cover of forage species was found to level off at 2.9 times the initial cover value 8 years after a summer deferment grazing system was initiated. For computing vegetation cover for this EIS this increase was rounded to three times.)

The sagebrush vegetation type of Four Mile Mesa allotment is used as an example.

Area of sagebrush type	= 346 acres
Area proposed for treatment:	
PA & EORV	= 100 acres
MLFP	= 142 acres
Current average vegetation cover	= 23.8 percent
Cover of forage grass species:	
Galleta	= 0.250 percent
Crested wheatgrass	= 0.125 percent
Blue grama	= 0.350 percent

This allotment is currently being grazed from November 1 through June 30. Therefore, the change in grazing management would be to initiate rest during the proposed spring rest period (April 1 through May 31).

Blue grama is a warm-season species and is not currently being grazed during its critical developmental stages. Crested wheatgrass is a cool-season species and is currently being grazed during its critical developmental stages. Galleta exhibits developmental characteristics as either a warm-season or cool-season grass depending on the environmental conditions (particularly moisture availability) of any growing season. Therefore, it was projected that there would be no change in the cover of blue grama, approximately a three-fold increase in cover of crested wheatgrass, and an increase of 1.5 times for galleta due to grazing management changes.

Formulae used:

$$\text{Projected Cover} = \text{Existing Cover} + \text{Increased Cover of Crested Wheatgrass} + \text{Increased Cover of Galleta}$$

$$\text{Increased Cover of Crested Wheatgrass} = 3 \times \text{Existing Cover} - \text{Existing Cover}$$

$$\text{Increased Cover of Galleta} = 1.5 \times \text{Existing Cover} - \text{Existing Cover}$$

Therefore:

$$\text{Projected Cover} = 23.8 + 3 \times 0.0125 - 0.0125 + 1.5 \times 0.25 - 0.25 = 23.95$$

or 24 percent for alternatives with no vegetation treatments.

The projected cover value was further adjusted to account for vegetation treatments by the following formula.

$$\text{Projected Cover} = \frac{\text{Acres Untreated} \times \text{Untreated Cover} + \text{Acres Treated} \times \text{Treated Cover}}{\text{Total Acres}}$$

The previously treated areas selected as representative of this site have an average cover value of 17.5 percent. Therefore, for the PA and EORV alternative:

$$\text{Projected Cover} = \frac{(246)(23.95) + (100)(17.5)}{346} = 22.09$$

or 22 percent, and for the MLFP alternative:

$$\text{Projected Cover} = \frac{(204)(23.95) + (142)(17.5)}{346} = 21.30$$

or 21 percent.

APPENDIX C-6

METHODS FOR PREDICTING FUTURE VEGETATION PRODUCTION

Two considerations were used in arriving at predictions of future vegetation production. The first is changes expected from vegetation treatments. The second relates to changes in production resulting from predicted cover changes.

To predict production changes resulting from vegetation treatments, BLM range survey records were examined and the average production values from areas having received particular treatments in the past were computed. It was assumed that future similar treatments (for the proposed action or alternatives) would produce similar amounts.

To predict production changes that would result from cover changes, the ground cover index for grasses and the perennial grass production for corresponding years' data from the San Louis Watershed Study (USDA, 1972) were used. These data are as follows:

Year Measured	Ground Cover Index	Production (lbs/acre)
1952	4.9	195
1955	4.1	168
1958	3.0	238
1961	7.9	250
1963	11.7	283
1964	9.3	498
1969	9.5	721
1971	9.7	509

Correlation coefficients between cover and production were calculated for all data and for the data excluding that collected in 1963, which appears not to fit the general trend. Coefficients of determination were also computed. These statistics were computed by procedures described by Steel and Torrie (1960).

These statistics computed are as follows:

	Correlation Coefficient	Coefficient of Determination
With all data	.556	.31
Without 1963 data	.815	.66

These statistics indicate that a much larger portion of the changes in production can be attributed to cover changes when data for 1963 were excluded than when all data were used. Therefore, to establish a relationship between cover and productivity, the data for 1963 were not used.

The relationship between cover and productivity was established by computing a regression coefficient using methods described by Steel and Torrie (1960). For this computation, cover was considered the independent variable and production was considered the dependent variable. The regression coefficient computed was 60.3 which indicates that for each one percentage point increase in the ground cover index, production was increased by 60.3 pounds per acre. It was assumed that this relationship would be applicable to the San Juan Planning Unit, and that 50 percent of the increased production predicted using this relationship would be useable forage. Since environmental conditions for plant growth in the San Juan Planning Unit are varied, no attempt was made to predict future production of specific sites based on this relationship. However, this relationship was used to predict future production for the whole of the planning unit after overall average changes in cover were computed.

APPENDIX C-7

DETERMINATION OF POTENTIAL VEGETATION PRODUCTION

Potential vegetative production for 138 allotments in the San Juan Grazing Planning Unit area was determined through use of the following method:

Soil map units were put on overlays for each allotment, and then planimetered to obtain the total acreage of each map unit.

Range sites[a] for each unit were determined, and the corresponding annual potential production in pounds of air dry herbage per acre during "favorable" years was assigned to each unit. This value is weighted to reflect the percentage of each range site in a map unit.

Assumptions are:

1. A 5% decrease in computed potential production due to roads, well pads, stock tanks, reservoirs, and other land uses.

2. A utilization factor of 50%.

3. An AUM equal to 720 pounds of air dry herbage.

4. Vegetative production is expressed in terms of "air-dry herbage" and not as "forage"; proper use of each species is indirectly accounted for in a general way by the assumptions.

In addition, certain map units (i.e., 04B, 220, 01B) are for the most part unuseable by livestock because of physical characteristics of the land. The amount of production available from these sources is indicated as being available primarily to wildlife.

Example: Jaramillo Community Allotment
No. 5093
19,894 acres

Soil Map Unit	Acres	Range Site Productivity lbs./acre[b]	Potential Production lbs. (air dry)	Total Annual Production AUMs
010	8,426	1,025	8,636,650	5,698
032	93	900	83,700	55
090	1,185	840	995,400	656
110	6,306	622.5[c]	3,925,485	2,590
220	3,351	225	753,975	498[d]
240	533	0	0	0

Total for allotment: 9,497 AUMs

Notes: a/ USDA, Soil Conservation Service, 1978 and 1979.

b/ Weighted value, annual air dry herbage production.

c/ Values including decimal points were used for arithmetical purposes only, and are not meant to imply a level of accuracy.

d/ This map unit and its vegetative production are available primarily to wildlife.

APPENDIX C-8

PREDICTING FUTURE RANGE CONDITION

Predictions of future range condition for each vegetation type in each allotment were made by resource area range conservationists. These are estimates of future condition that they felt would be realized for three management schemes. The first management scheme was that livestock grazing management practices would not change from the existing practices. The second scheme was that livestock grazing would be managed in such a way that the principal forage species would be rested in at least one year out of every three during their critical developmental stages of growth (maximum vegetative growth through reproduction and seed-set). The third scheme was that grazing would be managed as in the second scheme, but additionally that any portion of a vegetation type that could benefit from vegetation treatments would receive those treatments.

The predictions for any particular allotment were estimates based on the judgement of the range conservationist who conducted the range survey for that allotment. Considerations for making these estimates were: present condition, species composition, aspect, slope, soil characteristics, and knowledge of similar areas being operated under different grazing management schemes.

Methodology for Determining Sediment Yield -- Proposed Action

The PSIAC method was used as the basis for determining potential sediment yield in the San Juan Planning Unit. Using this method, Earth Environmental Consultants (EEC) provided (by contract) the present sediment yield for each soil map unit delineation. Copies of this contract information (Earth Environmental Consultants, October, 1979) are available in the BLM Albuquerque District Office. The Proposed Action and potential sediment yield levels were equated, as the potential closely relates to Proposed Action management results.

Ground Cover

The percent bare ground in the Proposed Action was obtained from SCS Range Site Descriptions issued April 1978 and March 1979. This information was used in conjunction with a nomograph developed by DSC (Ron Clark) and Lynn Shaun of USGS, which provided an objective means of arriving at the necessary PSIAC factor value.

Upland Erosion

The potential value for this factor was determined by using the following assumptions: 1) decrease the factor value to 10 if the present value is > 10 but < 20: if the present value is ≥ 20, decrease the factor value by 5 points. 2) If the present value is ≤ 10, that value will also be used for the potential.

Upland Erosion is difficult to evaluate. With management (and treatment where feasible or necessary) a decrease in upland erosion is the most probable reality. Excluded from this assumption are areas of Badland, areas not amenable to treatment or management, or areas with high rates of geologic erosion. The factor value "10" in the PSIAC method (upland erosion, channel erosion, and sediment transport) represents a more moderate level of erosion; this is a level that has a realistic probability of being obtained through management (and/or treatment where feasible) over the period of implementation. These same assumptions are applied to channel erosion and sediment transport.

Areas with present factor values of 20 or greater represent more severe erosion conditions and are unlikely to respond as readily or

favorably to management and/or treatment. The factors representing such a condition were decreased by only 5 points to arrive at a probable level of improvement.

Channel Erosion and Sediment Transport

(Same as for Upland Erosion)

Summary

Ground Cover:	Potential % bare ground from SCS Range Site Descriptions, in conjunction with BLM-USGS Nomograph to get factor value.
Upland Erosion:	1) decrease factor to 10 if present is > 10 but < 20: if present value is $\geq$ 20, decrease factor by 5 points.
Channel Erosion & Sediment Transport:	2) if present factor value is $\leq$ 10, that value will be used.

Where sediment yield at present is less than that calculated for the potential, the lesser value was used. This is in keeping with the foregoing discussion or methodology.

APPENDIX C-10

PSIAC METHOD FOR CALCULATING SEDIMENT YIELD

The Pacific Southwestern Inter-Agency Committee's (1968) Method was used to determine soil loss. The following is the sediment yield classification:

Sediment Yield Classification	Rating	Sediment Yield Ac. ft./sq.mi./yr.
1 Severe	More than 100	More than 3.0
2 Critical	70-100	1.0-3.0
3 Moderate	50-70	0.5-1.0
4 Slight	27-50	0.2-0.5
5 Stable	Less than 27	Less than 0.2

Nine factors were evaluated for present and future sediment yield, and points were assigned to each factor by using the PSIAC nomographs. The points were totaled for each soil and placed in sediment yield classes. The following are the factors for evaluation used to determine these ratings.

Factors	PSIAC Factor Rating Minimum	Maximum
A. - Surface Geology - Surface geology was evaluated as soil texture from a depth of 0 to 4 inches to determine this rating. Sandy soils received the lowest rating, 0, and soils with a high clay content received a high rating, 10.	0	10
B. - Soils - This factor was rated the same as as surface geology except the depth is 4 inches to effective rooting depth.	0	10
C. - Climate - Climate was rated according to the value on the PSIAC nomograph for a 2-year, 6-hour, isopluvial storm in the NOAA Atlas 2.	0	10
D. - Precipitation Intensity - (Runoff) Precipitation intensity was rated the same as climate for the Existing Environment, but was rated 1 or 2 points lower for the Proposed Action according to the runoff reductions in the Water Resources Section.	0	10
E. - Topography - This factor was rated according to the percent slope. A soil with a 30-percent slope got the maximum number of points, 20, and a nearly level soil got the minimum factor rating, 0.	0	20

F. - Cover - -10 10

The amount of cover includes the percent cover from vegetation plus the percent coarse fragments on the soil surface. A soil with 100-percent cover would receive a rating of -10. A soil with 0-percent cover would receive a rating of 10. Percent cover and the associated PSIAC rating for the Existing Environment, Proposed Action, and alternatives is presented in Table A-21, p. A-77.

G. - Land Use - -10 10

Land use was determined by the percent utilization from the Vegetation Section. A soil with 100-percent utilization would receive a rating of 10. A soil with 0-percent utilization would receive a rating of -10.

H. - Upland Erosion - 0 25

SSFs were used for rating the amount of upland erosion. The SSF for the most representative soil was used for every mapping unit. SSF methodology is presented in Appendix 1, Figure A-2, p. A-11.

I. - Channel Erosion and Sediment Transport - 0 25

The rating for this factor was determined by field observation for the amount of gullying. A soil with active headcuts and continuously eroding banks would receive the maximum rating of 25.

- PSIAC factor points were totaled and assigned a sediment yield value.

Methodology for Determining Sediment Yield --
Alternatives (NA, ELG, MLFP, and EORV)

Both the existing and potential levels of sediment yield were needed to determine sediment yield by alternative. The existing sediment yield level was used as the basis for comparison with the No Action (NA) alternative. The other alternatives (ELG, MLFP, and EORV) were compared with the potential (or Proposed Action) level of sediment yield, because this value more closely relates to these management actions.

The significance of the numerical values is not in their absolute value, but in the magnitude and relative change among and within alternatives. The values derived through this process indicate the probable trend in sediment yield by alternative.

The estimated percentage of vegetative cover by alternative (Appendix 3-9) was used as the basis for calculating sediment yield by alternative. The average percentage of increase/decrease/no change was used as an indirect indication of the direction each allotment would take with regard to sediment yield by alternative. This percentage (plus, minus, or zero) was applied directly to the appropriate sediment yield value -- either existing or proposed -- and the yield was computed by alternative.

APPENDIX C-12

WILDLIFE POPULATIONS AND FORAGE ALLOCATION ESTIMATES

Wildlife Populations

Current Populations

Wildlife numbers for the San Juan Allotment Analysis were determined by the BLM Area Biologist on each allotment, as the analysis was being written by different members of the survey team. An estimation of the wildlife (big game) numbers, class of animal, occupied area, and season of use was determined from past and present records. These records consist of the San Juan URA-MFP (USDI, BLM, 1979c and 1979f), aerial game surveys, Habitat Management Plan, Allotment Management Plans, spring vegetation utilization transects, and combined pellet transects from the Bureau of Land Management and New Mexico Department of Game and Fish. Browse condition and trend transects, which have been run jointly with the Department every third year beginning in 1970, were also used. Based upon information obtained from these records, big game numbers, season of use, and class of animal were assigned to each allotment. After all allotments had been analyzed a table was drawn up to portray the allotment, number of big game per allotment, season of use per allotment, and class of animals per allotment (San Juan URA Step 3, USDI, BLM, 1979f). This table was presented to personnel of the New Mexico Department of Game and Fish for their evaluation and comments. Concurrence was received from the Department on February 22, 1979.

Projected Population Estimates

Potential populations of big game wildlife were based on estimates of current populations in the Planning Unit in addition to information obtained from the Bureau's San Juan Planning Area Analysis (USDI, BLM, 1979d) concerning future demands, New Mexico Department of Game and Fish long-range plans, and the results of the Bureau's planning system based on habitat potentials and multiple-use considerations. Using this data, the number of deer, antelope, elk, and Barbary sheep anticipated by the year 2000 was developed for each allotment under the Proposed Action. These numbers were prorated, based on the percentage of public lands having potential habitat in each allotment.

For sample allotment No. 5119, BLM resource specialists determined that 20 year-long deer (10 winter deer), 6 elk, no antelope and 12 Barbary sheep currently could be carried under current conditions and that the year 2000 population would consist of 40 year-long deer (20 winter deer), 12 elk, no antelope and 41 Barbary sheep under the provisions of the Proposed Action.

Estimates for the No Action, Enhancement of Other Resource Values, and Elimination of Livestock Grazing Alternatives were made in cooperation with the New Mexico Department of Game and Fish after their personnel reviewed specifications of these two alternatives.

Forage Allocation Estimates

Step 3 (USDI, BLM, 1979f) also indicates the big game AUMs needed per allotment. AUMs for big game were derived from BLM Technical Note by Loren D. Anderson and Jeff W. Denton entitled "Base Data Analysis Required for Forage Allocation," November 22, 1979. The portion of the Technical Note used was "Determining Forage Consumption Rates For Big Game." The process is based on the average weight of an animal (wildlife species weight factor) in a given population. In this procedure, one cow is equal to an average of 720 pounds and one cow AUM is equal to a single cow grazing for a one-month period. Weight estimations for big game on this basis were obtained from the New Mexico Game and Fish Department: 5 deer = 1 AUM, 2 elk = 1 AUM, 10 antelope = 1 AUM, and 3 Barbary sheep = 1 AUM. Based on the length of time the wildlife species are in the allotment, year-long or winter use (4 months), the formula for arriving at number of AUMs needed for wildlife is:

Number of Wildlife X Amount of Time in Allotment =
Wildlife Use Days

$$\frac{\text{Wildlife Use Days}}{\text{Wildlife Weight Factor}} = \text{Number of AUMs needed for wildlife (species)}$$

Example:

22 antelope X 12 months = 264 Antelope Use Days

$$\frac{\text{264 Antelope Use Days}}{\text{10 Wildlife Weight Factor}} = \text{26.4 AUMs needed for wildlife (antelope)}$$

APPENDIX D

CLIMATE

APPENDIX D-1

ANNUAL AND MAY THROUGH OCTOBER PRECIPITATION,
AND FROST-FREE DAYS FOR YEARS OF RECORD
(1950 through 1978)

Weather Station	Number of Years of Record	Precipitation (inches)				Frost-Free Days (No./Year)		
		Annual Average	High(Year)	Low(Year)	Avg., May thru Oct.	Annual Average	Greatest (Year)	Lowest (Year)
Aztec Ruins Natl. Mon.	28	8.88	16.94(1957)	5.53(1950)	4.95	141	178(1957)	98(1973)
Bloomfield	28	7.83	14.13(1957)	3.05(1950)	4.81	174	207(1977)	153(1971)
Farmington	22	8.23	14.50(1965)	4.15(1966)	4.95	137	178(1957)	105(1961)
Fruitland	28	7.23	14.79(1957)	3.05(1950)	4.21	144	190(1961)	86(1957)
Lybrook	27	10.68	20.67(1957)	2.47(1955)	6.69	142	186(1966)	98(1973)
Navajo Dam	15	10.92	17.26(1978)	7.40(1963)	6.43	167	186(1965)	158(1970& 1975)
Otis	21	9.25	14.33(1969)	6.78(1973)	6.50	148	187(1963)	111(1971)

Source: National Oceanic and Atmospheric Administration, 1950-1978.

APPENDIX D-2

AVERAGE MONTHLY AND ANNUAL PRECIPITATION AND TEMPERATURES FOR YEARS OF RECORD
(1950 through 1978)

Weather Station		Monthly Average												Annual Average
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Aztec Ruins Natl. Mon.	Precipitation	.81	.56	.59	.62	.41	.32	.95	1.15	.87	1.25	.56	.79	8.88
	Temperature	28.5	35.1	41.0	49.5	58.8	68.0	74.6	72.1	62.4	53.7	39.9	30.0	51.1
Bloomfield	Precipitation	.49	.34	.52	.56	.33	.29	.96	1.30	.81	1.12	.53	.58	7.83
	Temperature	29.2	35.9	42.5	51.2	61.2	71.1	76.6	74.0	66.4	54.8	40.9	30.9	52.9
Farmington	Precipitation	.58	.43	.54	.53	.37	.41	.79	1.16	.93	1.29	.56	.64	8.23
	Temperature	27.5	34.9	41.2	49.2	59.4	68.8	75.4	72.8	64.2	52.5	39.4	29.7	51.3
Fruitland	Precipitation	.58	.38	.46	.48	.34	.27	.86	.95	.83	.96	.48	.64	7.23
	Temperature	28.7	35.6	42.2	50.6	59.9	70.0	75.5	73.2	65.0	54.3	40.5	30.1	52.1
Lybrook	Precipitation	.66	.63	.79	.41	.52	.43	1.31	2.12	1.10	1.12	.74	.76	10.68
	Temperature	26.4	30.1	36.6	44.9	54.7	62.3	67.1	64.5	65.0	47.9	35.4	26.5	46.2
Navajo Dam	Precipitation	.69	.54	.68	.72	.70	.53	1.32	1.64	1.12	1.12	.85	1.10	10.92
	Temperature	26.1	32.8	39.9	47.5	58.5	67.7	75.1	72.1	64.2	53.3	39.9	29.0	50.5
Otis	Precipitation	.39	.44	.50	.38	.40	.62	1.46	1.69	.99	1.34	.48	.56	9.25
	Temperature	26.4	32.2	38.2	46.2	56.6	66.3	71.7	68.9	61.6	50.9	38.3	29.1	48.9

Source: National Oceanic and Atmospheric Administration, Environmental Data Center. 1950-1978.

APPENDIX E

VEGETATION

APPENDIX E-1

PHENOLOGICAL DEVELOPMENTAL STAGES OF THE MAJOR FORAGE AND BROWSE SPECIES

Major Grass Species			
Species	Start-Growth	Flower	Seed-Ripe
Alkali sacaton[a]	Mid-April	Early-May	Early-June
Blue grama[a]	Late-July	Mid-August	Mid-September
Crested wheatgrass[a]	Mid-March	Mid-April	Mid-May
Galleta[a]	Early-April Late-July	Mid-May Mid-August	Early-June Mid-September
Indian ricegrass[a]	Mid-March	Late-April	Mid-May
Junegrass	Late-March	Mid-April	Mid-May
Ring muhly	Late-July	Mid-August	Mid-September
Sand dropseed	Late-July	Mid-August	Mid-September
Squirreltail[a]	Mid-March	Mid-April	Mid-May
Western wheatgrass[a]	Late-March	Late-April	Mid-May

Major Shrub Species			
Species	Start-Growth	Flower	Seed-Ripe
Big sagebrush	Late-March	Late-July	Early-October
Bitterbrush[a]	Late-March	Mid-May	Late-September
Black sagebrush	Late-March	Late-July	Early-October
Ephedra[a]	Mid-March	Mid-April	Mid-May
Fourwing saltbush[a]	Early-March	Mid-April	Mid-October
Greasewood	Early-April	Mid-July	Mid-September
Mountain mahogany[a]	Late-March	Mid-May	Early-October
Rabbitbrush	Early-April	Mid-August	Late-September
Serviceberry	Late-March	Mid-May	Late-September
Shadscale	Late-March	Late-July	Early-September

Source: BLM Planning Documents, 1979.

[a] Potential key species.

APPENDIX E-2

PROPOSED VEGETATION TREATMENTS -- PROPOSED ACTION
(Acres)

Allotment Number	Seed Only	Sagebrush			Pinyon-Juniper	Total Acres Treated
		Chain Only	Chain and Seed	Plow and Seed	Chain and Seed	
5012	120					120
5026				1,687		1,687
5037			961			961
5039		1,000	500			1,500
5043			300			300
5045			250			250
5046			70			70
5047			600			600
5048			634			634
5049			110			110
5052				160	700	860
5053					360	360
5054					300	300
5055			700	500		1,200
5056				1,000		1,000
5058			1,200			1,200
5059			300			300
5060			600			600
5061				237		237
5062			700	80		780
5065				500		500
5068			600			600
5070		1,800				1,800
5071			400			400
5072		6,000				6,000
5074		600				600
5075		600				600
5076		5,000				5,000
5077		2,000				2,000
5078		700				700
5079		600				600
5080		700				700
5081		2,200				2,200
5082		1,000				1,000
5083		150				150
5084		400				400
5087				120		120
5088			740			740
5089				80		80

APPENDIX E-2 (Concluded)

PROPOSED VEGETATION TREATMENTS -- PROPOSED ACTION
(Acres)

Allotment Number	Seed Only	Sagebrush			Pinyon-Juniper	Total Acres Treated
		Chain Only	Chain and Seed	Plow and Seed	Chain and Seed	
5090				160		160
5091			150	300		450
5092				150		150
5093			200			200
5094				100		100
5095				150		150
5096				220		220
5097				150		150
5098				100		100
5099				40		40
5100			150			150
5102				100		100
5104				80		80
5105				80		80
5106			1,000			1,000
5108			330			330
5109				80		80
5110		300				300
5111		600				600
5112		150				150
5113		2,000	80			2,080
5114		1,400				1,400
5115				300		300
5116			180			180
5117		160	200			360
5118		1,300	800			2,100
5119		600	3,900	500		5,000
5120			350			350
5124		160	300			460
5135				40		40
Total	120	29,420	16,305	6,914	1,360	54,119

Source: BLM Planning Documents, 1979.

APPENDIX E-3

SUMMARY OF PROPOSED VEGETATION TREATMENTS--
MAXIMIZATION OF LIVESTOCK FORAGE PRODUCTION ALTERNATIVE[a/]

Allotment Name	Allotment Number	Spray (Acres)	Mechanical Treatment (Acres)		Additional AUMs Available to Livestock through Manipulation
		Sagebrush	Pinyon-Juniper	Sagebrush	
Coal Bank Canyon	5011		899	861	112
State Line	5014		160		18
Coyote Hills	5015		87	63	31
Farmington Glade	5016		828	612	214
La Plata Common	5018		324	236	23
Adobe Downs	5019		160	80	9
Hartley Springs	5020		65	15	7
Ruins	5021		4,550	930	279
Animas River	5024		40		7
South Aztec	5032		1,566	483	141
Potter Canyon	5033		765	475	111
North Place	5036		1,345	465	117
Knickerbocker Peak	5037		6,118	2,691	1,072
North Blanco Community	5039		1,045	745	113
Crow Canyon	5043		300	330	23
Hart Canyon	5045		668	722	107
Hart Mountain	5046		254	86	29
Animas Community	5047		2,908	1,442	376
Little Pump	5048		160	110	31
Alamo Canyon	5049		470	280	46
Sandstone Canyon	5050		2,210	1,150	369
Tank Mountain Community	5052		5,826	264	360
Rattlesnake Canyon	5054		2,020	140	81
Pump Mesa	5055		14,353	3,237	2,843
Middle Mesa Community	5056		4,725	1,205	857
Frances Mesa	5059		1,638	792	207
Manuel Canyon	5060		1,654	826	151
Manuel Mesa	5061		715	129	20
Frances Canyon	5062		1,172	568	205
La Baca Canyon	5063		715	125	71

APPENDIX E-3 (Cont'd)

Allotment Name	Allotment Number	Spray	Mechanical Treatment		Additional AUMs Available to Livestock through Manipulation
		Sagebrush (Acres)	Pinyon-Juniper (Acres)	Sagebrush (Acres)	
Sims Mesa	5064		1,352	798	105
Lopez Canyon	5065		72	238	30
Trujillo Spring	5068		95	85	12
East Armenta Canyon	5069		788		57
Jacquez Canyon Community	5070	4,240	3,566	3,594	310
Jacquez Community	5073	2,805			374
Duffers Point	5076	2,740	52	68	281
Huerfano	5077		278	1,922	38
South Blanco Community	5078	1,160			66
Petrified Forest	5079	1,000			89
Sweetwater	5080	120	1,192	1,008	142
Largo Community	5083	3,880			222
Sheep Well	5084		416	744	94
Nageezi	5085	120			12
Martinez Mesa	5087		1,454	686	161
Baltzar Peak	5088		45	15	6
Navajo Dam	5089		1,546	344	155
Cool Water Canyon	5090		172	258	43
Manzanares Mesa	5091	240			31
Navajo City	5092		655	35	61
Jaramillo Community	5093		672	968	229
Ridge Road	5094		710	30	42
Jesus Canyon	5095		5,178	742	333
Jesus Mesa	5096		1,218	232	122
Gobernador Canyon	5097		240	80	14
Devils Spring	5098		954	336	105
Gobernador Camp	5100		490	630	64
Four Mile Mesa	5102		168	42	20
Laguna Seca Draw	5104		138	22	23
Snyder Peak	5105			20	2

APPENDIX E-3 (Concluded)

Allotment Name	Allotment Number	Spray (Acres)	Mechanical Treatment (Acres)		Additional AUMs Available to Livestock through Manipulation
		Sagebrush	Pinyon-Juniper	Sagebrush	
Canyon Largo	5106		3,265	1,045	262
Delgadito Mesa	5107		3,580	700	248
Carrizo Canyon	5108		44	66	15
Munoz Canyon	5109		518	92	48
Pioche Canyon	5112	480	40		52
Ensenada Mesa	5113	240	40		31
Superior Mesa	5115	3,960	4,192	3,588	1,044
Gonzales Mesa	5116		822	908	114
Carter Mesa	5117		1,950	1,950	328
Crow Mesa	5118		1,950	780	203
Rancho Largo	5119	4,720	7,050	8,620	2,353
La Parita Canyon	5120			290	36
Gallo Canyon	5124		246	224	45
Kutz Canyon	5125		1,576	34	108
Horn Canyon	5128		400		33
La Jara Mesa	5135		505	95	78
Flora Vista	5140		1,520	520	166
Total (Overall = 183,465)		25,705	106,889	50,871	16,437
Estimated Cost[b/] Per Acre (1979)		$7.00	$8.00 to $29.75	$4.00 to $18.00	
Estimated Total Cost		$176,000	$855,000 to $3,180,000	$203,500 to $915,700	$1,234,500 to $4,271,700

Source: BLM Planning Documents, 1979.

Notes: a/ These treatments would be applied in addition to those shown for the proposed action in Appendix I-4.

b/ Cost range per acre is based on the following: Sagebrush-- $4.00 per acre for plowing or double chaining; $18.00 per acre for plowing and seeding. Pinyon-Juniper-- $8.00 per acre for double chaining; $29.75 per acre for double chaining and seeding.

APPENDIX E-4

VEGETATION TYPE, RANGE CONDITION (ACRES), AND VEGETATIVE COVER BY ALLOTMENT, SAN JUAN PLANNING UNIT

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Existing AMPs						
5005	Shumway Arroyo	Grassland	6,542			8
		Shadscale		2,407		15
		Greasewood			1,685	12
		Pinyon-Juniper		1,103		7
		Barren		83	560	3
5026	Lonetree Mt.	Sagebrush		5,286		21
		Pinyon-Juniper		5,965		26
		Steep and Rocky			3,073	12
		Barren			433	4
		Meadow			145	26
5047	Animas Comm.	Sagebrush		1,696	3,153	30
		Pinyon-Juniper			5,169	22
		Steep and Rocky			868	31
5052	Tank Mt. Comm.	Sagebrush	249	1,226	907	28
		Pinyon-Juniper	289	18,860		46
		Steep and Rocky			2,934	18
5053	Mt. Nebo	Sagebrush		46		47
		Pinyon-Juniper	198	2,615		35
		Steep and Rocky		2,868		36
5055	Pump Mesa	Sagebrush	2,072		7,543	32
		Pinyon-Juniper	338	20,801		30
		Steep and Rocky			7,644	36
5056	Middle Mesa Comm.	Sagebrush	1,751		5,871	33
		Pinyon-Juniper	5,800	18,090		33
		Steep and Rocky			2,578	24
5058	Rosa Comm.	Sagebrush	3,360	8,057		39
		Pinyon-Juniper	253	14,494		41
		Steep and Rocky			6,157	41
5059	Frances Mesa	Sagebrush		1,968	9,551	26
		Pinyon-Juniper	10,144			18
		Steep and Rocky			5,958	16
5095	Jesus Canyon	Sagebrush	842			21
		Pinyon-Juniper	1,760	5,760		24
		Steep and Rocky		975		16

APPENDIX E-4 (Cont'd)

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Existing AMPs						
5107	Delgadito Mesa	Grassland	59			6
		Sagebrush	5,612	3,763		26
		Greasewood		446		25
		Pinyon-Juniper	1,348	11,474		24
		Steep and Rocky			3,768	20
		Barren			151	2
5114	Ice Canyon	Sagebrush	4,568	9,861		12
		Pinyon-Juniper		9,357		19
		Steep and Rocky		1,980		12
5115	Superior Mesa	Sagebrush	3,498	6,338		22
		Greasewood		800	1,177	33
		Pinyon-Juniper			10,096	--
		Steep and Rocky			6,120	--
		Barren			716	--
		Meadow			159	--
5116	Gonzales Mesa	Sagebrush	1,898	2,774		35
		Greasewood		2,258		33
		Pinyon-Juniper		2,699		26
		Steep and Rocky			1,404	22
		Barren			363	0
5118	Crow Mesa	Sagebrush		6,502		19
		Pinyon-Juniper		13,156		18
		Steep and Rocky			2,671	14
Intensive Management						
5001	North Hogback	Grassland		1,071		4
		Shadscale		2,956		14
		Greasewood			104	15
		Steep and Rocky		433		5
5002	Waterflow Comm.	Grassland	971			8
		Shadscale			3,247	6
		Steep and Rocky			225	9
		Barren			412	0
		Half Shrub			259	10
5003	Coal Flats	Grassland		253		4
		Shadscale		1,947		12
		Greasewood			154	17
		Steep and Rocky			22	--
		Fourwing Saltbush		276		4

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5004	Steven Arroyo	Grassland	1,866			11
		Shadscale	527			14
		Greasewood			196	12
		Barren			43	0
		Half Shrub	396			10
5006	Cline Arroyo	Grassland	2,298			7
		Shadscale		434		9
		Greasewood		83		8
		Pinyon-Juniper		1,024		9
		Barren			125	0
		Half Shrub		64		19
5007	Twin Mounds	Grassland		1,032		8
		Greasewood			53	18
		Pinyon-Juniper			1,822	13
		Steep and Rocky			426	9
		Half Shrub		2,312		11
5008	Norton Flats	Grassland	1,232			10
		Sagebrush	432			29
		Shadscale	105			15
		Greasewood	346			10
		Pinyon-Juniper		4,070		14
		Steep and Rocky			604	8
		Barren	71			1
5009	Cottonwood Arroyo Comm.	Grassland	2,601			9
		Pinyon-Juniper		4,326		32
		Barren		2,572		12
5010	Pinon Mesa	Grassland		806		10
		Sagebrush		1,450		14
		Greasewood			724	16
		Pinyon-Juniper		4,813		16
		Steep and Rocky		678		--
5011	Coal Bank Canyon	Grassland	791			1
		Sagebrush		5,211		7
		Shadscale		638		7
		Greasewood			241	17
		Pinyon-Juniper		2,539		14
		Steep and Rocky			326	5
5012	Jones Canyon	Sagebrush	400	636		20
		Pinyon-Juniper			1,945	43

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5013	Thomas Canyon	Sagebrush		549		34
		Pinyon-Juniper			843	25
5014	State Line	Sagebrush			450	38
		Pinyon-Juniper		230	618	32
5015	Coyote Hills	Sagebrush			89	14
		Pinyon-Juniper		690	272	23
5016	Farmington Glade	Grassland		1,318		4
		Sagebrush		11,251		21
		Greasewood		1,596		10
		Pinyon-Juniper		517	7,635	16
		Steep and Rocky		125		7
		Annuals			336	0
5017	McDermott Wash	Grassland		615		24
		Sagebrush		407		27
		Greasewood	139	124		19
		Pinyon-Juniper		112		12
		Half Shrub		358		13
5018	La Plata Comm.	Sagebrush		1,406		20
		Greasewood		150		16
		Pinyon-Juniper		1,584		17
5019	Adobe Downs	Sagebrush		1,128		23
		Pinyon-Juniper		1,935		12
5020	Hartley Springs	Sagebrush	4,359		649	21
		Greasewood	558			--
		Pinyon-Juniper		7,536		--
		Steep and Rocky		157		--
5021	Ruins	Sagebrush		5,152		16
		Greasewood		327		20
		Pinyon-Juniper		12,754		19
		Steep and Rocky			6,131	4
5022	Barton Arroyo	Sagebrush		339		19
		Pinyon-Juniper			102	21
		Steep and Rocky			79	16
		Half Shrub		76		11
5023	Kochis Arroyo	Sagebrush		109		13
		Pinyon-Juniper		123		14
		Steep and Rocky			8	9

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5024	Animas River	Pinyon-Juniper	285			17
5025	Riverside Comm.	Grassland		66		3
		Sagebrush			603	15
		Pinyon-Juniper		1,031		5
		Steep and Rocky			108	14
5027	East Farmington Comm.	Grassland		1,024		25
		Pinyon-Juniper		1,876		--
5028	Crouch Mesa	Grassland		2,744		10
		Sagebrush		1,656		20
		Pinyon-Juniper		4,507		12
		Half Shrub		489		13
5029	Crawford Mesa	Grassland	1,670			9
		Sagebrush		306		28
		Shadscale	512			9
		Greasewood			444	18
		Pinyon-Juniper	1,478			5
		Steep and Rocky	18			14
		Barren	37			0
		Rabbitbrush	76			10
5030	Aztec Comm.	Grassland	24			11
		Sagebrush			213	21
		Pinyon-Juniper	1,493			11
		Barren		157		5
5031	Bloomfield Comm.	Grassland	852			1
		Sagebrush		2,914		11
		Shadscale		108		7
		Greasewood		399		21
		Pinyon-Juniper	5,397			10
		Steep and Rocky			683	5
		Barren			33	2
		Rabbitbrush		318		11
5032	South Aztec	Sagebrush		3,543		15
		Pinyon-Juniper		8,432		11
		Steep and Rocky			452	10
5033	Potter Canyon	Grassland		1,021		11
		Sagebrush		1,777		16
		Greasewood			202	20
		Pinyon-Juniper		3,080		19
		Steep and Rocky			244	4

APPENDIX E-4 (Cont'd)

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5034	South Hogback	Grassland		1,157		4
		Shadscale		717		7
		Steep and Rocky		370		10
		Barren			166	0
		Fourwing Saltbush		246		10
5035	Gonzales Comm.	Grassland	2,550			6
		Greasewood		153		13
		Pinyon-Juniper	326			16
		Barren		11		0
5036	North Place	Sagebrush			1,114	26
		Greasewood			77	20
		Pinyon-Juniper			2,788	41
		Steep and Rocky			139	20
		Barren			20	--
		Rabbitbrush		1,365		18
5037	Knickerbocker Peak Comm.	Sagebrush	133	140	5,789	28
		Pinyon-Juniper		13,636		31
		Steep and Rocky			228	17
		Rabbitbrush		581		22
5038	Blanquito	Grassland	392			--
5039	North Blanco Comm.	Grassland	563			--
		Sagebrush		4,654	536	--
		Pinyon-Juniper		2,887		--
		Steep and Rocky			827	--
5040	Five Mile Comm.	Grassland		141		4
		Sagebrush		200		18
		Greasewood		897		11
		Pinyon-Juniper		1,427		8
		Steep and Rocky		69		14
		Barren		1,318		1
5041	Pump Canyon Comm.	Sagebrush		834	1,514	22
		Greasewood			188	24
		Pinyon-Juniper	157	2,520		14
		Steep and Rocky			1,372	20
		Barren			287	0
		Rabbitbrush		80		20

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5043	Crow Canyon	Sagebrush		2,584		16
		Greasewood		115		20
		Pinyon-Juniper		2,890		18
		Steep and Rocky			990	4
5044	Archuleta Comm.	Sagebrush		607		--
		Pinyon-Juniper		793		--
		Steep and Rocky	228			--
		Barren			134	--
		Meadow			188	--
5045	Hart Canyon	Sagebrush		476	664	21
		Pinyon-Juniper		1,048		10
		Steep and Rocky			76	11
5046	Hart Mountain	Sagebrush			542	26
		Pinyon-Juniper			2,099	30
		Steep and Rocky			185	15
5048	Little Pump	Sagebrush			858	20
		Pinyon-Juniper		1,673		20
		Steep and Rocky		26		15
5049	Alamo Canyon	Sagebrush		1,032		20
		Pinyon-Juniper		2,479		9
		Steep and Rocky			773	9
5050	Sandstone Canyon	Sagebrush		2,051		20
		Pinyon-Juniper		3,597		9
		Steep and Rocky			1,558	9
		Barren			73	--
5051	Cutter Dam	Grassland		105		10
		Sagebrush		108		31
		Greasewood		67		17
		Pinyon-Juniper	498	272		21
		Steep and Rocky			114	33
		Barren			156	0
5054	Rattlesnake Canyon	Sagebrush			481	34
		Pinyon-Juniper		3,593		24
		Steep and Rocky		1,966		7
5057	Mentzel Mesa	Sagebrush		74		30
		Pinyon-Juniper		265		41
		Steep and Rocky			128	45

APPENDIX E-4 (Cont'd)

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5060	Manuel Canyon	Sagebrush	1,058	2,497		23
		Pinyon-Juniper		3,699		27
		Barren		56		0
5061	Manuel Mesa	Sagebrush		404		27
		Pinyon-Juniper		1,485		24
		Steep and Rocky		113		3
5062	Frances Canyon	Sagebrush		6,683		36
		Pinyon-Juniper		4,648		25
		Steep and Rocky			2,418	17
		Meadow	28			16
5063	La Baca Canyon	Sagebrush	156	124		23
		Greasewood			167	43
		Pinyon-Juniper		1,577		32
		Steep and Rocky			320	32
		Barren			24	0
5064	Sims Mesa	Sagebrush		3,168		19
		Pinyon-Juniper		4,045		23
		Steep and Rocky			2,210	25
5065	Lopez Canyon	Grassland		18		16
		Sagebrush		1,147		24
		Pinyon-Juniper		323		27
		Barren			12	0
5066	La Jara Canyon	Sagebrush	137			22
		Greasewood	192			24
		Pinyon-Juniper		556		8
		Barren		77		0
5067	Cemetery Ridge	Sagebrush		472		20
		Greasewood		82		13
		Pinyon-Juniper		706		22
		Steep and Rocky			236	23
5068	Trujillo Spring	Sagebrush		3,108		20
		Greasewood		930		13
		Pinyon-Juniper		1,884		22
		Steep and Rocky			165	23

APPENDIX E-4 (Cont'd)

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Fair	Poor	Vegetative Cover (%)
Intensive Management						
5069	East Armenta	Grassland	114			14
		Greasewood		1,817	86	13
		Pinyon-Juniper		1,447		18
		Steep and Rocky			63	17
		Barren			1,521	6
5070	Jacquez Canyon Comm.	Grassland		43		9
		Sagebrush	3,785	8,596		22
		Greasewood		605		16
		Pinyon-Juniper		14,512		15
		Steep and Rocky			1,383	9
		Barren			4,654	6
5071	Harris Mesa	Grassland	327			9
		Sagebrush			916	26
		Greasewood			249	20
		Pinyon-Juniper			6,737	41
		Steep and Rocky			3,964	20
		Rabbitbrush		1,475		18
5072	Angel Peak	Grassland	2,387			24
		Sagebrush		40,838		21
		Pinyon-Juniper			6,306	11
		Barren			7,689	1
5073	Jacquez Comm.	Grassland		2,395		6
		Sagebrush		4,730		20
		Greasewood		1,972		18
		Pinyon-Juniper		6,478		20
		Steep and Rocky			2,025	1
		Barren			975	0
5074	Forty-Four	Sagebrush	4,097	1,733		26
		Pinyon-Juniper		69		18
5075	Huerfanito Peak	Sagebrush		1,973		16
		Greasewood		227		15
		Pinyon-Juniper			1,079	15
		Steep and Rocky			38	--
5076	Dufer's Point	Grassland	208			16
		Sagebrush	242	14,335		17
		Greasewood		1,695		32
		Pinyon-Juniper		9,866		26
		Steep and Rocky			4,836	14
		Barren			802	35
		Meadow			274	35

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5077	Huerfano	Sagebrush	6,196	5,675		9
		Greasewood			92	11
		Pinyon-Juniper			672	11
5078	S. Blanco Comm.	Grassland		489		5
		Sagebrush		7,622		10
		Greasewood		242		14
		Pinyon-Juniper		832		8
		Steep and Rocky			106	--
		Barren			779	0
5079	Petrified Forest	Sagebrush	407	2,859		25
		Pinyon-Juniper	668			22
		Steep and Rocky			156	15
		Barren			410	1
5080	Sweetwater	Sagebrush		3,441		28
		Pinyon-Juniper		2,054		28
		Steep and Rocky			727	12
		Barren			528	2
5081	Blanco Trading Post	Sagebrush		6,092		14
		Pinyon-Juniper		1,621		15
		Barren			116	2
5082	Mission	Sagebrush	1,490	781		16
		Pinyon-Juniper	570			10
5083	Largo Comm.	Grassland			217	3
		Sagebrush		24,600		14
		Shadscale			2,934	3
		Pinyon-Juniper			10,835	17
		Steep and Rocky			648	0
		Barren			5,992	1
5084	Sheep Well	Sagebrush		3,392		26
		Pinyon-Juniper		2,304		18
		Steep and Rocky			315	12
		Barren			877	1
5085	Nageezi	Sagebrush	286	1,610		10
		Pinyon-Juniper			912	11
		Barren			140	0
5086	Turley	Pinyon-Juniper		552		31
		Steep and Rocky			145	9

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5087	Martinez Mesa	Sagebrush		320	522	2
		Pinyon-Juniper			1,733	18
		Steep and Rocky			1,212	12
		Barren			190	0
		Meadows		160		5
5088	Baltzar Peak	Sagebrush		1,369		28
		Pinyon-Juniper		3,875	50	64
		Steep and Rocky			2,104	12
5089	Navajo Dam	Sagebrush	299	1,356		25
		Pinyon-Juniper	67	2,431		24
		Steep and Rocky			1,250	6
		Barren			133	0
		Rabbitbrush		13		10
5090	Cool Water Canyon	Sagebrush		968	197	17
		Pinyon-Juniper		463		14
		Steep and Rocky			473	12
		Barren			39	2
5091	Manzanares Mesa	Sagebrush		1,715	243	23
		Pinyon-Juniper		855	1,454	21
		Steep and Rocky			870	11
5092	Navajo City	Sagebrush	1,603	1,678		19
		Pinyon-Juniper	3,827			23
		Steep and Rocky			1,266	16
		Barren			127	0
5093	Jaramillo Comm.	Grassland	126			17
		Sagebrush	1,153	4,584		29
		Greasewood	82	5,301		27
		Pinyon-Juniper		5,149		22
		Steep and Rocky			2,872	24
		Barren			627	2
5094	Ridge Road	Sagebrush		376		19
		Pinyon-Juniper	4,742	249		20
		Steep and Rocky			2,994	33
		Barren			93	0
5096	Jesus Mesa	Sagebrush			1,054	23
		Pinyon-Juniper			2,425	16
		Steep and Rocky			1,394	9

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5097	Gobernador Canyon	Sagebrush		508	2,651	14
		Greasewood			47	141
		Pinyon-Juniper			3,082	20
		Steep and Rocky			1,533	25
5098	Devil's Spring	Sagebrush		888		31
		Pinyon-Juniper		2,189		23
		Steep and Rocky			593	16
5099	Four Mile Canyon	Sagebrush		1,012		18
		Pinyon-Juniper		961		22
		Steep and Rocky	252			23
5100	Gobernador Camp	Sagebrush	311	2,044		17
		Greasewood		738		14
		Pinyon-Juniper			1,149	23
		Steep and Rocky			538	13
5102	Four Mile Mesa	Sagebrush	807	346		24
		Greasewood		45		19
		Pinyon-Juniper		1,326		28
5103	Headwater Canyon	Sagebrush			126	39
		Pinyon-Juniper		173		32
5104	Laguna Seca Draw	Sagebrush		263		14
		Greasewood			13	23
		Pinyon-Juniper	214	1,465		30
		Steep and Rocky			380	19
5105	Snyder Peak	Sagebrush		687		26
		Greasewood		70		24
		Pinyon-Juniper	5,333			33
		Steep and Rocky		866	2,329	34
		Barren			21	2
5106	Canyon Largo	Grassland	687			20
		Sagebrush	4,854	566		22
		Greasewood		3,049		11
		Pinyon-Juniper		14,237		11
		Steep and Rocky			14,442	8
		Barren			1,161	0
		Meadow		837		28
		Rabbitbrush			449	18

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Fair	Poor	Vegetative Cover (%)
Intensive Management						
5108	Carrizo Canyon	Sagebrush	57		508	30
		Greasewood	1,159		25	34
		Pinyon-Juniper			714	26
		Steep and Rocky	890			25
		Barren	173			0
		Meadow		21		48
5109	Munoz Canyon	Sagebrush	582	420		23
		Greasewood			1,669	43
		Pinyon-Juniper		2,060		32
		Steep and Rocky			1,107	32
		Barren			249	0
5110	Otis	Sagebrush	1,655	240		9
5111	South Equus	Sagebrush	2,173			13
		Barren			2,790	3
5112	Pioche Canyon	Sagebrush	1,710	1,156		17
		Pinyon-Juniper		1,338		17
		Steep and Rocky			1,323	--
		Barren			114	--
5113	Ensenada Mesa	Sagebrush	12,318			28
		Greasewood	1,955			42
		Pinyon-Juniper	13,949		1,036	33
		Steep and Rocky			5,240	9
		Barren			312	5
5117	Carter Mesa	Sagebrush	1,700		239	28
		Greasewood		793	33	14
		Pinyon-Juniper		663		19
		Steep and Rocky		618		5
5119	Rancho Largo	Sagebrush	3,735	8,153	27,404	15
		Greasewood		2,187		9
		Pinyon-Juniper	22,248	369		22
		Steep and Rocky		9,591		19
		Barren			676	0
		Meadows		80		8
		Annuals			106	14
5120	La Parita Canyon	Sagebrush	315	1,044		16
		Pinyon-Juniper	329			13
		Steep and Rocky		315		9

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5121	North Equus	Sagebrush	1,296			12
		Pinyon-Juniper	756			22
		Steep and Rocky		272		9
5122	Eagle Rock	Sagebrush		3,064	91	14
		Pinyon-Juniper		1,931	99	32
		Steep and Rocky			576	6
		Barren			511	0
5123	Escrito Spring	Pinyon-Juniper	369			29
		Steep and Rocky	123			29
5124	Gallo Canyon	Grassland	23			11
		Sagebrush	1,418			15
		Pinyon-Juniper		1,339		11
		Steep and Rocky			280	18
		Annuals	54			2
5125	Kutz Canyon	Grassland		1,324		5
		Sagebrush	159			22
		Greasewood	166			9
		Pinyon-Juniper		4,763	2,456	12
		Barren			3,708	8
		Meadow		70		12
		Rabbitbrush			37	13
5126	Head Canyon	Grassland	79			10
		Pinyon-Juniper		3,968		13
		Barren			590	3
		Rabbitbrush			224	7
5127	Gallegos Canyon	Pinyon-Juniper		1,853		19
5128	Horn Canyon	Grassland	291			16
		Pinyon-Juniper	740			14
5129	Stewart Canyon	Sagebrush		911		22
		Pinyon-Juniper		4,308	5,378	13
		Steep and Rocky		297		14
5130	Santo Nino	Sagebrush		243		34
		Pinyon-Juniper	990			34
		Steep and Rocky		177	358	34
5131	Bonito	Sagebrush		1,661		29
		Pinyon-Juniper	150	2,739		28
		Steep and Rocky		130		10

Allotment No.	Allotment Name	Vegetation Type	Range Condition Good	Range Condition Fair	Range Condition Poor	Vegetative Cover (%)
Intensive Management						
5132	Rivershore	Shadscale	35			--
		Barren			20	--
		Meadow	10			81
		Broadleaf Trees			12	--
5133	Jewett Valley	Barren			25	0
		Broadleaf Trees	21			33
5134	San Juan River	Barren		10		0
		Meadows		130		53
5135	La Jara Mesa	Sagebrush	553	3,784		22
		Greasewood		726		28
		Pinyon-Juniper		2,579		31
		Steep and Rocky			1,456	38
5136	Hargis Arroyo	Grassland	236			6
		Sagebrush			60	17
		Shadscale			30	12
		Steep and Rocky			255	7
5137	Chico	Grassland		162		--
		Sagebrush		607		18
		Greasewood		526		11
		Pinyon-Juniper		1,719		8
		Steep and Rocky		291		4
5138	North Glade	Sagebrush		1,311		15
		Greasewood		231		13
		Pinyon-Juniper		1,803		11
		Steep and Rocky			54	10
5139	Coach	Sagebrush		2,585		15
		Pinyon-Juniper		3,037		11
		Steep and Rocky			101	10
		Half Shrub		79		5
5140	Flora Vista	Sagebrush		3,790		21
		Pinyon-Juniper			11,477	16
		Steep and Rocky		122		7
	Totals		203,484	730,168	344,969	

Source: BLM Planning Documents, 1979.

APPENDIX E-5

RANGE TREND[a/]

Allotment No.	Allotment Name	Trend Index (acres) Up	Static	Down	Date of Last Determination
5005	Shumway Arroyo			12,380	1979
5026	Lonetree Mountain	2,996	11,907		1976
5058	Rosa Community	32,321			1970
5059	Frances Mesa[b/]	14,542	8,657		1974
5115	Superior Mesa	28,904			1974
5116	Gonzales Mesa[b/]	2,817	2,177	2,705	1975
Totals		81,580	22,741	15,085	
Percent of Sample Area		68	19	13	

Source: Allotment Files, Farmington Area Office, BLM.

Notes: a/ Trend studies have been initiated on all allotments with AMPs, but trend has not been determined on those that have not completed a grazing cycle.

b/ Portions of these allotments are not included in the management system of the AMPS, and no trend index determinations were made for those portions.

APPENDIX E-6

MAJOR PLANT SPECIES IN THE SAN JUAN PLANNING UNIT

TREES AND SHRUBS

SCIENTIFIC NAME	COMMON NAME[a/]
Amelanchier Spp.	serviceberry
Artemisia filifolia	sand sagebrush
Artemisia spinescens	bud sagebrush
Artemisia tridentata	big sagebrush
Atriplex canescens	fourwing saltbush
Atriplex confertifolia	shadscale
Atriplex corrugata	mat saltbush
Atriplex elegans	annual saltbush
Ceratoides lanata	winterfat
Cercocarpus montanus	mountain mahogany
Chrysothamnus Spp.	rabbitbrush
Elaeagnus angustifolia	Russian olive
Ephedra Spp.	Mormon tea (jointfir)
Fendlera rupicola	cliff fendlerbush
Forestiera neomexicana	New Mexican forestiera
Juniperus monosperma	one-seed juniper
Juniperus osteosperma	Utah juniper
Lycium pallidum	pale wolfberry
Pinus edulis	pinyon pine
Pinus ponderosa	ponderosa pine
Populas angustifolia	narrowleaf cottonwood
Populus fremontii	Fremont cottonwood
Pseudotsuga menziesii	Douglas fir
Purshia tridentata	antelope bitterbrush
Quercus gambelii	Gambel oak +
Rhus trilobata	skunkbush sumac
Phibes Spp.	currant
Sarcobatus vermiculatus	black greasewood +
Tamarix Spp.	salt cedar
Yucca Spp.	yucca
Xanthocephalum sarothrae	broom snakeweed +

FORBS

SCIENTIFIC NAME	COMMON NAME[a/]
Abronia fragrans	snowball sandverbena* (w)
Allium spp.	wild onion (c)
Ambrosia spp.	ragweed* (w)
Asclepias subverticillata	horsetail milkweed + (w)
Aster spp.	aster (c)
Astragalus spp.	poisonous locos + (c)
Castilleja spp.	Indian paintbrush (c)
Chenopodium spp.	goosefoot (c)
Cleome spp.	beeplant* (w)
Delphinium spp.	larkspur + (c)
Descurainia spp.	tansy mustard + (c)
Dithyrea wislizewii	spectacle-pod* (w)
Erigeron spp.	fleabane (w)
Erigonoum spp.	buckwheat (w)
Erodium spp.	filaree (c)
Helianthus annuus	sunflower* (c)
Hymenoxys richardsoni	Colorado rubberweed + (c)
Lupinus spp.	lupine + (c)
Medicago staiva	alfalfa
Melilotus officinalis	yellow sweetclover (w)
Mirabilis multiflora	wild four-o'clock (w)
Opuntia spp.	cactus (c)
Penstemon spp.	bluebells (c)
Phlox spp.	wild phlox (c)
Plantago spp.	Indian wheat* (c)
Ranunculus spp.	buttercup* (w)
Rumex crispus	curley dock (c)
Salsola kali	Russian thistle (w) (c)
Sanguisorba minor	small burnet
Senecio spp.	groundsel
Solidago spp.	goldenrod
Sphaeralcea spp.	globemallow (c)
Xanthium strumarium	cocklebur *

GRASSES

SCIENTIFIC NAME	COMMON NAME[a/]
Agropyron cristatum (desertorum)	crested wheatgrass (c)
Agropyron smithii	western wheatgrass (c)
Agropyron trichophorum	pubescent wheatgrass (c)
Aristida longiseta	red three-awn (w)
Bouteloua barbata	sixweeks grama* (w)
Bouteloua curtipendula	side-oats grama (w)
Bouteloua gracilis	blue grama (w)
Bromus inermis	smooth brome (c)
Bromus tectorum	cheatgrass* (c)
Distichlis stricta	inland saltgrass (w)
Festuca arizonica	Arizona fescue (c)
Hilaria jamesii	galleta (w)
Hordeum jubatum	foxtail barley (c)
Koeleria cristata	prairie junegrass (c)
Muhlenbergia pungens	sandhill muhly (w)
Muhlenbergia torreyi	ring muhly (w)
Oryzopsis hymenoides	Indian ricegrass (c)
Poa fendleriana	mutton bluegrass (c)
Poa pratensis	Kentucky bluegrass (c)
Schizachyrium scoparium	little bluestem (w)
Sitanion hystrix	bottlebrush squirreltail (c)
Sporobolus airoides	alkali sacaton (w)
Sporobolus contractus	spike dropseed (w)
Sporobolus crytandrus	sand dropseed (w)
Sporobolus giganteus	giant dropseed (w)
Stipa comata	needle-and-thread
Stripa robusta	sleepygrass (w)
Vulpia octoflora	sixweeks fescue* (c)

Source: BLM Planning Documents, 1979.

[a/] c = cool season species, w = warm season species, * = annual, + = poisonous.

APPENDIX E-7

POISONOUS PLANT SPECIES OF THE SAN JUAN PLANNING UNIT

Name	Animals Affected	Effects	When Toxic
Broom snakeweed	cattle and sheep	abortions	Year-round
Colorado rubberweed	usually sheep	vomiting/weakness	Summer, Fall
Death camas	sheep	coma/death	Spring
Gambel oak	cattle	weakness/death	Spring
Greasewood	sheep	kidney lesions	Spring
Groundsel	cattle	death	Srping
Halogeton	sheep	rapid death	Fall, Winter
Horsebrush	sheep	death	Spring
Low larkspur	cattle	death	Spring
Locoweed	cattle and sheep	loss of coordination	Year-round
Lupine	sheep	depression	Summer
Milkweed	cattle and sheep	spasms/death	Summer
Sneezeweed	sheep	vomiting/weakness	Summer
Tansy mustard	cattle	blindness/death	Spring

Source: BLM Planning Documents, 1979.

APPENDIX E-8

EFFECT OF PROPOSED ACTION ON STOCKING RATE AND REST PERIODS

Allotment Number	Percent Stocking Adjustment[a]		Spring Rest[b] (4/1-5/31)	Summer Rest[b] (7/15-9/15)
Allotments with Existing AMPs				
5005	I	28		
5026	D	51		
5047	I	99		
5052	I	11		
5053	D	34		
5055	D	16		
5056	I	<1		
5058	I	20		
5059	D	30		
5095	D	13		
5107	D	2		
5114	D	6		
5115	D	9		
5116	D	37		
5118	D	39		
Allotments Proposed for Intensive Management				
5001	I	29		
5002	I	33	*	**
5003	I	161	*	
5004	D	36	*	**
5006	I	279	*	
5007	I	1	**	**
5008	I	210	*	
5009	D	19	**	**
5010	I	164	**	
5011	D	38	**	
5012	D	66	*	
5013	D	100	*	
5014	D	21	*	
5015	I	223	*	
5016	D	34	**	
5017	I	24	**	
5018	I	21	*	**
5019	I	340	**	
5020	I	20		
5021	I	36	*	
5022	I	6	**	**
5023	D	86		**
5024	I	1,850	*	
5025	I	67	**	**
5027	D	37	*	**
5028	D	54	**	**
5029	D	14	**	**
5030	I	109	*	**
5031	N.C.		*	**
5032	I	69	*	
5033	I	18	*	
5034	I	129	**	**
5035	I	80	**	**
5036	I	181	*	
5037	I	174	*	
5038	I	53	*	
5039	I	4	*	**
5040	I	153	*	**
5041	I	60	**	**
5042	Scattered tracts not in allotments			
5043	I	63	*	
5044	I	96	**	**
5045	I	142	*	
5046	I	1,520	**	**
5048	D	18	*	**

Allotment Number	Percent Stocking Adjustment[a]		Spring Rest[b] (4/1-5/31)	Summer Rest[b] (7/15-9/15)
Allotments Proposed for Intensive Management				
5049	I	63		
5050	I	72		
5051	D	60	**	
5054	I	8	*	**
5057	D	100	**	**
5060	D	5	**	
5061	D	22	**	
5062	D	27	**	**
5063	I	70		**
5064	D	45	**	
5065	I	13[c]	**	
5066	I	-[c]		
5067	D	65	**	**
5068	I	12	**	**
5069	I	213	*	
5070	I	32	**	**
5071	I	1	**	
5072	I	66	**	**
5073	I	18	**	**
5074	I	80	*	
5075	I	52	**	
5076	D	9	**	
5077	I	116	**	**
5078	D	26[c]	**	**
5079	I	-[c]	**	**
5080	D	28	**	**
5081	D	33		
5082	D	22	**	**
5083	D	17	**	**
5084	I	164	**	**
5085	D	39	**	**
5086	I	23	*	**
5087	I	16	*	**
5088	D	10	*	**
5089	D	54	**	
5090	D	13	**	**
5091	D	3	*	
5092	I	32	**	
5093	D	9	**	**
5094	I	11	**	
5096	D	48	**	
5097	D	69	*	
5098	D	42	**	**
5099	D	10	**	**
5100	D	42	*	
5102	D	19	**	
5103	D	85	*	**
5104	D	21	*	
5105	I	165	*	
5106	D	2	**	
5108	I	13	**	
5109	I	5	**	
5110	I	1,285	**	**
5111	I	153	**	**
5112	D	23	**	**
5113	I	54	**	**
5117	I	155	**	
5119	D	28	**	**
5120	D	62	**	**
5121	D	56	**	**
5122	I	35	**	**
5123	D	61	**	**
5124	I	80		
5125	D	42	**	**
5126	D	69	**	**

Allotment Number	Percent Stocking Adjustment[a]	Spring Rest[b] (4/1-5/31)	Summer Rest[b] (7/15-9/15)
Allotments Proposed for Intensive Management			
5127	I 21	**	**
5128	I 18	**	**
5129	D 1	**	**
5130	D 5	**	**
5131	I 706	**	**
5132	I 14	**	**
5133	D 92	*	**
5134	D 76	**	**
5135	D 17	**	
5136	D 27	*	**
5137	I 35	**	
5138	I 468	*	
5139	I 823	*	
5140	I 46	*	

Source: BLM Planning Documents, 1979.

[a] The degree to which the stocking rate would be adjusted by the Proposed Action relative to the active licensed use (6-yr. avg.):

D = Decrease; I = Increase; N.C. = No change

[b] * = Current period of use overlaps a portion of the proposed period of rest.

** = Current period of use overlaps the total proposed period of rest. (Implementation of the PA, ELG, MLFP, or EORV would result in initiation of rest from grazing during these periods in at least one year out of three on areas that had not previously received this rest.)

[c] Allotments have had zero active licensed use during the past 6 years.

APPENDIX E-9

EXISTING AND ESTIMATED FUTURE PERCENT VEGETATION COVER FOR THE PROPOSED ACTION AND ALTERNATIVES

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000				
			PA	NA	ELG	MLFP	EORV
Allotments with Existing AMPs							
5005	Grassland	8	8	8	8	8	8
	Shadscale	15	15	15	15	15	15
	Greasewood	12	12	12	12	12	12
	Pinyon-Juniper	7	8	8	8	8	8
	Barren	3	3	3	3	3	3
5026	Sagebrush	21	20	21	21	20	20
	Pinyon-Juniper	26	26	26	26	26	26
	Steep and Rocky	12	12	12	12	12	12
	Barren	4	4	4	4	4	4
	Meadow	26	30	26	30	30	30
5047	Sagebrush	30	28	30	30	24	28
	Pinyon-Juniper	22	22	22	22	16	22
	Steep and Rocky	31	31	31	31	31	31
5052	Sagebrush	28	27	28	28	25	27
	Pinyon-Juniper	46	44	44	44	37	44
	Steep and Rocky	18	18	18	18	18	18
5053	Sagebrush	47	47	47	47	47	47
	Pinyon-Juniper	35	32	35	35	35	35
	Steep and Rocky	36	36	36	36	36	36
5055	Sagebrush	32	29	31	32	22	29
	Pinyon-Juniper	30	31	30	31	18	31
	Steep and Rocky	36	36	36	36	36	36
5056	Sagebrush	33	30	33	33	28	30
	Pinyon-Juniper	33	33	33	33	28	33
	Steep and Rocky	24	24	24	24	24	24
5058	Sagebrush	39	36	39	39	36	36
	Pinyon-Juniper	41	41	41	41	41	41
	Steep and Rocky	41	41	41	41	41	41
5059	Sagebrush	26	25	26	26	24	25
	Pinyon-Juniper	18	19	19	19	17	19
	Steep and Rocky	16	16	16	16	16	16
5095	Sagebrush	21	19	21	22	12	19
	Pinyon-Juniper	24	25	24	25	18	25
	Steep and Rocky	16	16	16	16	16	16
5107	Grassland	6	9	9	9	9	9
	Sagebrush	26	26	26	26	25	26
	Greasewood	25	25	25	25	25	25
	Pinyon-Juniper	24	25	25	25	23	25
	Steep and Rocky	20	20	20	20	20	20
	Barren	2	2	2	2	2	2
5114	Sagebrush	12	12	12	12	12	12
	Pinyon-Juniper	19	20	19	20	20	20
	Steep and Rocky	12	12	12	12	12	12
5115	Sagebrush	22	21	22	21	12	21
	Greasewood	33	33	33	33	33	33
	Pinyon-Juniper	19	20	20	20	18	20
	Steep and Rocky	12	12	12	12	12	12
	Barren	T	T	T	T	T	T
	Meadow	35	35	35	35	35	35

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000				
			PA	NA	ELG	MLFP	EORV
Allotments with Existing AMPs							
5116	Sagebrush	35	34	35	35	30	34
	Greasewood	33	33	33	33	33	33
	Pinyon-Juniper	26	27	26	27	25	27
	Steep and Rocky	22	22	22	22	22	22
	Barren	T	T	T	T	T	T
5118	Sagebrush	19	16	19	20	15	16
	Pinyon-Juniper	18	19	18	19	18	19
	Steep and Rocky	19	19	19	19	19	19
Allotments Proposed for Intensive Management							
5001	Grassland	4	8	8	8	8	8
	Shadscale	14	14	14	14	14	14
	Greasewood	15	15	15	15	15	15
	Steep and Rocky	5	5	5	5	5	5
5002	Grassland	8	8	8	8	8	8
	Shadscale	6	8	8	8	8	8
	Steep and Rocky	9	9	9	9	9	9
	Barren	T	T	T	T	T	T
	Half Shrub	10	10	10	10	10	10
5003	Grassland	4	6	6	6	6	6
	Shadscale	12	12	12	12	12	12
	Greasewood	17	17	17	17	17	17
	Steep and Rocky	-	-	-	-	-	-
	Fourwing Saltbush	4	4	4	4	4	4
5004	Grassland	11	11	11	11	11	11
	Shadscale	14	15	14	15	15	15
	Greasewood	12	14	12	14	14	14
	Barren	T	T	T	T	T	T
	Half Shrub	10	11	10	11	11	11
5006	Grassland	7	8	8	8	8	8
	Shadscale	9	10	10	10	10	10
	Greasewood	8	10	10	10	10	10
	Pinyon-Juniper	9	9	9	9	9	9
	Barren	T	T	T	T	T	T
	Half Shrub	19	19	19	19	19	19
5007	Grassland	8	12	8	10	12	12
	Greasewood	18	18	18	18	18	18
	Pinyon-Juniper	13	14	13	14	14	14
	Steep and Rocky	9	9	9	9	9	9
	Half Shrub	11	13	11	12	13	13
5008	Grassland	10	12	11	11	12	12
	Sagebrush	29	29	29	29	29	29
	Shadscale	15	15	15	15	15	15
	Greasewood	10	11	10	11	11	11
	Pinyon-Juniper	14	14	14	14	14	14
	Steep and Rocky	8	8	8	8	8	8
	Barren	1	1	1	1	1	1
5009	Grassland	9	12	8	12	12	12
	Pinyon-Juniper	32	32	32	32	32	32
	Barren	12	12	12	12	12	12
5010	Grassland	10	13	11	13	13	13
	Sagebrush	14	15	14	15	15	15
	Greasewood	16	17	16	17	17	17
	Pinyon-Juniper	16	18	16	18	18	18
	Steep and Rocky	16	16	16	16	16	16

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000				
			PA	NA	ELG	MLFP	EORV
Allotments Proposed for Intensive Management							
5011	Grassland	1	6	4	6	6	6
	Sagebrush	7	12	7	12	11	12
	Shadscale	7	9	7	9	9	9
	Greasewood	17	17	17	17	17	17
	Pinyon-Juniper	14	16	14	16	15	16
	Steep and Rocky	5	5	5	5	5	5
5012	Sagebrush	20	25	20	23	25	25
	Pinyon-Juniper	43	43	43	43	43	43
5013	Sagebrush	34	34	34	34	34	34
	Pinyon-Juniper	25	25	25	25	25	25
5014	Sagebrush	38	38	38	38	38	38
	Pinyon-Juniper	32	33	33	33	31	33
5015	Sagebrush	14	14	14	14	10	14
	Pinyon-Juniper	23	23	23	23	23	23
5016	Grassland	4	6	4	6	6	6
	Sagebrush	21	24	20	24	23	24
	Greasewood	10	13	9	13	13	13
	Pinyon-Juniper	16	17	14	17	12	17
	Steep and Rocky	7	7	7	7	7	7
	Annuals	T	T	T	T	T	T
5017	Grassland	24	24	24	24	24	24
	Sagebrush	27	27	27	27	27	27
	Greasewood	19	19	19	19	19	19
	Pinyon-Juniper	12	13	12	13	13	13
	Half Shrub	13	13	13	13	13	13
5018	Sagebrush	20	21	20	21	19	21
	Greasewood	16	16	16	16	16	16
	Pinyon-Juniper	17	17	17	17	16	17
5019	Sagebrush	23	23	23	23	22	23
	Pinyon-Juniper	12	12	12	12	12	12
5020	Sagebrush	21	21	21	21	21	21
	Greasewood	17	17	17	17	17	17
	Pinyon-Juniper	26	26	26	26	26	26
	Steep and Rocky	12	12	12	12	12	12
5021	Sagebrush	16	16	16	16	15	16
	Greasewood	20	20	20	20	20	20
	Pinyon-Juniper	19	19	19	19	18	19
	Steep and Rocky	4	4	4	4	4	4
5022	Sagebrush	19	21	19	21	21	21
	Pinyon-Juniper	21	21	21	21	21	21
	Steep and Rocky	16	16	16	16	16	16
	Half Shrub	11	11	11	11	11	11
5023	Sagebrush	13	14	13	14	14	14
	Pinyon-Juniper	14	15	14	15	15	15
	Steep and Rocky	9	9	9	9	9	9
5024	Pinyon-Juniper	17	18	18	18	17	18
5025	Grassland	3	8	3	8	8	8
	Sagebrush	15	16	15	16	16	16
	Pinyon-Juniper	5	7	5	7	7	7
	Steep and Rocky	14	14	14	14	14	14

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000				
			PA	NA	ELG	MLFP	EORV
Allotments Proposed for Intensive Management							
5027	Grassland	25	25	25	25	25	25
	Pinyon-Juniper	12	12	12	12	12	12
5028	Grassland	10	12	9	12	12	12
	Sagebrush	20	21	20	21	21	21
	Pinyon-Juniper	12	13	12	13	13	13
	Half Shrub	13	13	12	13	13	13
5029	Grassland	9	10	9	10	10	10
	Sagebrush	28	28	28	28	28	28
	Shadseale	9	10	9	10	10	10
	Greasewood	18	18	18	18	18	18
	Pinyon-Juniper	5	7	5	7	7	7
	Steep and Rocky	14	14	14	14	14	14
	Barren	T	T	T	T	T	T
	Rabbitbrush	10	11	9	11	11	11
5030	Grassland	11	12	11	12	12	12
	Sagebrush	21	21	21	21	21	21
	Pinyon-Juniper	11	11	11	11	11	11
	Barren	5	5	5	5	5	5
5031	Grassland	1	5	4	5	5	5
	Sagebrush	11	13	11	13	13	13
	Shadscale	7	8	7	8	8	8
	Greasewood	21	21	21	21	21	21
	Pinyon-Juniper	10	12	10	12	12	12
	Steep and Rocky	5	5	5	5	5	5
	Barren	2	2	2	2	2	2
	Rabbitbrush	11	12	11	12	12	12
5032	Sagebrush	15	15	15	15	15	15
	Pinyon-Juniper	11	11	11	11	11	11
	Steep and Rocky	10	10	10	10	10	10
5033	Grassland	11	11	11	11	11	11
	Sagebrush	16	16	16	16	14	16
	Greasewood	20	20	20	20	20	20
	Pinyon-Juniper	19	19	19	19	17	19
	Steep and Rocky	4	4	4	4	4	4
5034	Grassland	4	8	6	8	8	8
	Shadscale	7	8	7	8	8	8
	Steep and Rocky	10	10	10	10	10	10
	Barren	T	T	T	T	T	T
	Fourwing Saltbush	10	10	10	10	10	10
5035	Grassland	6	9	6	9	9	9
	Greasewood	13	14	13	14	14	14
	Pinyon-Juniper	16	17	16	17	17	17
	Barren	T	T	T	T	T	T
5036	Sagebrush	26	26	26	26	21	26
	Greasewood	20	20	20	20	20	20
	Pinyon-Juniper	41	41	41	41	25	41
	Steep and Rocky	20	20	20	20	20	20
	Barren	T	T	T	T	T	T
	Rabbitbush	18	18	18	18	18	18
5037	Sagebrush	28	25	28	28	19	25
	Pinyon-Juniper	31	31	31	31	21	31
	Steep and Rocky	17	17	17	17	17	17
	Rabbitbrush	22	22	22	22	22	22
5038	Grassland	6	9	9	9	9	9

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000				
			PA	NA	ELG	MLFP	EORV
Allotments Proposed for Intensive Management							
5039	Grassland	11	13	12	13	13	13
	Sagebrush	33	31	33	34	31	31
	Pinyon-Juniper	33	34	33	34	27	34
	Steep and Rocky	19	19	19	19	19	19
5040	Grassland	4	8	6	8	8	8
	Sagebrush	18	19	18	19	19	19
	Greasewood	11	13	12	13	13	13
	Pinyon-Juniper	8	10	9	10	10	10
	Steep and Rocky	14	14	14	14	14	14
	Barren	1	1	1	1	1	1
5041	Sagebrush	22	23	22	23	23	23
	Greasewood	24	24	24	24	24	24
	Pinyon-Juniper	14	16	14	16	16	16
	Steep and Rocky	20	20	20	20	20	20
	Barren	T	T	T	T	T	T
	Rabbitbrush	20	20	20	20	20	20
5043	Sagebrush	16	15	16	16	15	15
	Greasewood	20	20	20	20	20	20
	Pinyon-Juniper	18	18	18	18	17	18
	Steep and Rocky	4	4	4	4	4	4
5044	Sagebrush	21	22	21	22	22	22
	Pinyon-Juniper	12	13	12	13	13	13
	Steep and Rocky	20	20	20	20	20	20
	Barren	T	T	T	T	T	T
	Meadow	51	51	51	51	51	51
5045	Sagebrush	21	19	21	21	12	19
	Pinyon-Juniper	10	10	10	10	10	10
	Steep and Rocky	11	11	11	11	11	11
5046	Sagebrush	26	22	26	26	20	22
	Pinyon-Juniper	30	30	30	30	28	30
	Steep and Rocky	15	15	15	15	15	15
5048	Sagebrush	20	13	20	20	12	13
	Pinyon-Juniper	20	20	20	20	19	20
	Steep and Rocky	15	15	15	15	15	15
5049	Sagebrush	20	19	20	20	17	19
	Pinyon-Juniper	9	9	9	9	9	9
	Steep and Rocky	9	9	9	9	9	9
5050	Sagebrush	20	20	20	20	15	20
	Pinyon-Juniper	9	9	9	9	9	9
	Steep and Rocky	9	9	9	9	9	9
	Barren	T	T	T	T	T	T
5051	Grassland	10	12	9	12	12	12
	Sagebrush	31	31	31	31	31	31
	Greasewood	17	17	17	17	17	17
	Pinyon-Juniper	21	23	20	23	23	23
	Steep and Rocky	33	33	33	33	33	33
	Barren	T	T	T	T	T	T
5054	Sagebrush	34	34	34	34	33	34
	Pinyon-Juniper	24	23	24	24	13	23
	Steep and Rocky	7	7	7	7	7	7
5057	Sagebrush	30	30	30	30	30	30
	Pinyon-Juniper	41	41	41	41	41	41
	Steep and Rocky	45	45	45	45	45	45

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000 PA	NA	ELG	MLFP	EORV
Allotments Proposed for Intensive Management							
5060	Sagebrush	23	22	23	24	20	22
	Pinyon-Juniper	27	28	27	28	23	28
	Barren	T	T	T	T	T	T
5061	Sagebrush	27	19	27	28	17	19
	Pinyon-Juniper	24	25	24	25	19	25
	Steep and Rocky	3	3	3	3	3	3
5062	Sagebrush	36	35	36	36	33	35
	Pinyon-Juniper	25	26	25	26	23	26
	Steep and Rocky	17	17	17	17	17	17
	Meadow	16	26	16	26	26	26
5063	Sagebrush	23	24	23	24	18	24
	Greasewood	43	43	43	43	43	43
	Pinyon-Juniper	32	32	32	32	23	32
	Steep and Rocky	32	32	32	32	32	32
	Barren	T	T	T	T	T	T
5064	Sagebrush	19	22	19	22	17	22
	Pinyon-Juniper	23	24	23	24	17	24
	Steep and Rocky	25	25	25	25	25	25
5065	Grassland	16	17	16	17	17	17
	Sagebrush	24	18	24	24	17	18
	Pinyon-Juniper	27	27	27	27	24	27
	Barren	T	T	T	T	T	T
5066	Sagebrush	22	22	22	22	22	22
	Greasewood	24	24	24	24	24	24
	Pinyon-Juniper	8	10	10	10	10	10
	Barren	T	T	T	T	T	T
5067	Sagebrush	20	21	20	21	21	21
	Greasewood	13	15	13	15	15	15
	Pinyon-Juniper	22	22	22	22	22	22
	Steep and Rocky	23	23	23	23	23	23
5068	Sagebrush	20	18	20	21	18	18
	Greasewood	13	15	13	15	15	15
	Pinyon-Juniper	22	22	22	22	21	22
	Steep and Rocky	23	23	23	23	23	23
5069	Grassland	14	14	14	14	14	14
	Greasewood	13	13	13	13	13	13
	Pinyon-Juniper	18	18	18	18	16	18
	Steep and Rocky	17	17	17	17	17	17
	Barren	6	6	6	6	6	6
5070	Grassland	9	10	10	10	10	10
	Sagebrush	22	20	22	22	17	20
	Greasewood	16	16	16	16	16	16
	Pinyon-Juniper	15	16	15	16	15	16
	Steep and Rocky	9	9	9	9	9	9
	Barren	6	6	6	6	6	6

APPENDIX E-9 (Continued)

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000				
			PA	NA	ELG	MLFP	EORV
Allotments Proposed for Intensive Management							
5071	Grassland	9	10	10	10	10	10
	Sagebrush	26	20	26	26	20	20
	Greasewood	20	20	20	20	20	20
	Pinyon-Juniper	41	41	41	41	41	41
	Steep and Rocky	20	20	20	20	20	20
	Rabbitbrush	18	18	18	18	18	18
5072	Grassland	24	24	24	24	24	24
	Sagebrush	21	19	21	22	19	19
	Pinyon-Juniper	11	13	11	13	13	13
	Barren	1	1	1	1	1	1
5073	Grassland	6	8	7	7	7	7
	Sagebrush	20	21	20	21	18	21
	Greasewood	18	18	18	18	18	18
	Pinyon-Juniper	20	20	20	20	20	20
	Steep and Rocky	1	1	1	1	1	1
	Barren	T	T	T	T	T	T
5074	Sagebrush	26	24	26	26	24	24
	Pinyon-Juniper	18	18	18	18	18	18
5075	Sagebrush	16	14	16	16	14	14
	Greasewood	15	15	15	15	15	15
	Pinyon-Juniper	15	15	15	15	15	15
	Steep and Rocky	14	14	14	14	14	14
5076	Grassland	16	16	16	16	16	16
	Sagebrush	17	16	17	18	15	16
	Greasewood	32	32	32	32	32	32
	Pinyon-Juniper	26	26	26	26	26	26
	Steep and Rocky	14	14	14	14	14	14
	Barren	T	T	T	T	T	T
	Meadow	35	35	35	35	35	35
5077	Sagebrush	9	10	9	10	10	10
	Greasewood	11	11	11	11	11	11
	Pinyon-Juniper	11	12	11	12	12	12
5078	Grassland	5	8	5	8	8	8
	Sagebrush	10	11	10	11	11	11
	Greasewood	14	14	14	14	14	14
	Pinyon-Juniper	8	10	8	10	10	10
	Steep and Rocky	15	15	15	15	15	15
	Barren	T	T	T	T	T	T
5079	Sagebrush	25	22	25	25	19	22
	Pinyon-Juniper	22	22	22	22	22	22
	Steep and Rocky	15	15	15	15	15	15
	Barren	1	1	1	1	1	1
5080	Sagebrush	28	22	28	28	20	22
	Pinyon-Juniper	28	29	28	29	20	29
	Steep and Rocky	12	12	12	12	12	12
	Barren	2	2	2	2	2	2
5081	Sagebrush	14	13	14	15	13	13
	Pinyon-Juniper	15	16	15	16	16	16
	Barren	2	2	2	2	2	2

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000 PA	NA	FLG	MLFP	EORV
Allotments Proposed for Intensive Management							
5082	Sagebrush	16	15	16	17	15	15
	Pinyon-Juniper	10	12	10	12	12	12
5083	Grassland	3	7	3	7	7	7
	Sagebrush	14	14	14	15	13	14
	Shadscale	3	7	3	7	7	7
	Pinyon-Juniper	17	18	17	18	18	18
	Steep and Rocky	T	T	T	T	T	T
	Barren	1	1	1	1	1	1
5084	Sagebrush	26	24	26	26	22	24
	Pinyon-Juniper	18	19	18	19	18	19
	Steep and Rocky	12	12	12	12	12	12
	Barren	1	1	1	1	1	1
5085	Sagebrush	10	14	10	14	14	14
	Pinyon-Juniper	11	13	11	13	13	13
	Barren	T	T	T	T	T	T
5086	Pinyon-Juniper	31	32	31	32	32	32
	Steep and Rocky	9	9	9	9	9	9
5087	Sagebrush	19	18	19	20	14	18
	Pinyon-Juniper	18	19	18	19	17	19
	Steep and Rocky	12	12	12	12	12	12
	Barren	T	T	T	T	T	T
	Meadow	5	30	30	30	30	30
5088	Sagebrush	28	18	28	28	18	18
	Pinyon-Juniper	64	64	64	64	64	64
	Steep and Rocky	12	12	12	12	12	12
5089	Sagebrush	25	25	25	26	23	25
	Pinyon-Juniper	24	25	24	25	20	25
	Steep and Rocky	6	6	6	6	6	6
	Barren	T	T	T	T	T	T
	Rabbitbrush	10	12	10	12	12	12
5090	Sagebrush	17	17	17	19	17	17
	Pinyon-Juniper	14	16	13	16	16	16
	Steep and Rocky	12	12	12	12	12	12
	Barren	2	2	2	2	2	2
5091	Sagebrush	23	20	23	25	19	20
	Pinyon-Juniper	21	23	21	23	23	23
	Steep and Rocky	11	11	11	11	11	11
5092	Sagebrush	19	19	19	20	19	19
	Pinyon-Juniper	23	24	24	24	22	24
	Steep and Rocky	16	16	16	16	16	16
	Barren	T	T	T	T	T	T
5093	Grassland	17	17	16	17	17	17
	Sagebrush	29	28	29	29	26	28
	Greasewood	27	27	27	27	27	27
	Pinyon-Juniper	22	23	22	23	21	23
	Steep and Rocky	24	24	24	24	24	24
	Barren	2	2	2	2	2	2
5094	Sagebrush	19	17	19	19	17	17
	Pinyon-Juniper	20	21	20	21	20	21
	Steep and Rocky	33	33	33	33	33	33
	Barren	T	T	T	T	T	T
5096	Sagebrush	23	21	23	23	19	21
	Pinyon-Juniper	16	18	16	18	15	18
	Steep and Rocky	9	9	9	9	9	9

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000				
			PA	NA	ELG	MLFP	EORV
Allotments Proposed for Intensive Management							
5097	Sagebrush	14	15	14	15	15	15
	Greasewood	23	24	20	24	24	24
	Pinyon-Juniper	20	20	20	20	20	20
	Steep and Rocky	25	25	25	25	25	25
5098	Sagebrush	31	28	31	31	23	28
	Pinyon-Juniper	23	24	23	24	18	24
	Steep and Rocky	16	16	16	16	16	16
5099	Sagebrush	18	17	18	19	17	17
	Pinyon-Juniper	22	23	22	23	23	23
	Steep and Rocky	23	23	23	23	23	23
5100	Sagebrush	17	17	17	18	16	17
	Greasewood	14	15	14	15	15	15
	Pinyon-Juniper	23	24	23	24	21	24
	Steep and Rocky	13	13	13	13	13	13
5102	Sagebrush	24	22	24	24	21	22
	Greasewood	19	20	19	20	20	20
	Pinyon-Juniper	28	28	28	28	26	28
5103	Sagebrush	39	39	39	39	39	39
	Pinyon-Juniper	32	33	32	33	33	33
5104	Sagebrush	14	14	14	14	14	14
	Greasewood	23	23	23	23	23	23
	Pinyon-Juniper	30	30	30	30	28	30
	Steep and Rocky	19	19	19	19	19	19
5105	Sagebrush	26	24	26	26	24	24
	Greasewood	24	24	24	24	24	24
	Pinyon-Juniper	33	33	33	33	33	33
	Steep and Rocky	34	34	34	34	34	34
	Barren	2	2	2	2	2	2
5106	Grassland	20	20	20	20	20	20
	Sagebrush	22	20	22	23	19	20
	Greasewood	11	12	11	12	12	12
	Pinyon-Juniper	11	12	11	12	12	12
	Steep and Rocky	8	8	8	8	8	8
	Barren	T	T	T	T	T	T
	Meadow	28	28	28	28	28	28
	Rabbitbrush	18	18	18	18	18	18
5108	Sagebrush	30	22	30	30	22	22
	Greasewood	34	34	34	34	34	34
	Pinyon-Juniper	26	27	26	27	27	27
	Steep and Rocky	25	25	25	25	25	25
	Barren	T	T	T	T	T	T
	Meadow	48	48	48	48	48	48
5109	Sagebrush	23	21	23	24	20	21
	Greasewood	43	43	43	43	43	43
	Pinyon-Juniper	32	33	32	33	29	33
	Steep and Rocky	32	32	32	32	32	32
	Barren	T	T	T	T	T	T
5110	Sagebrush	9	12	10	12	12	12
5111	Sagebrush	13	15	16	16	16	15
	Barren	3	3	3	3	3	3
5112	Sagebrush	17	17	17	18	16	17
	Pinyon-Juniper	17	19	17	19	19	19
	Steep and Rocky	12	12	12	12	12	12
	Barren	T	T	T	T	T	T

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000				
			PA	NA	ELG	MLFP	EORV
Allotments Proposed for Intensive Management							
5113	Sagebrush	28	26	28	30	26	26
	Greasewood	42	42	42	42	42	42
	Pinyon-Juniper	33	34	33	34	34	34
	Steep and Rocky	9	9	9	9	9	9
	Barren	5	5	5	5	5	5
5117	Sagebrush	28	26	28	29	25	26
	Greasewood	14	15	14	15	15	15
	Pinyon-Juniper	19	20	19	20	18	20
	Steep and Rocky	5	5	5	5	5	5
5119	Sagebrush	15	15	15	17	15	15
	Greasewood	9	12	9	12	12	12
	Pinyon-Juniper	22	23	22	23	21	23
	Steep and Rocky	19	19	19	19	19	19
	Barren	T	T	T	T	T	T
	Meadow	8	20	8	20	20	20
	Annuals	14	14	14	14	14	14
5120	Sagebrush	16	16	15	18	15	16
	Pinyon-Juniper	13	16	12	16	16	16
	Steep and Rocky	9	9	9	9	9	9
5121	Sagebrush	12	15	10	15	15	15
	Pinyon-Juniper	22	23	21	23	23	23
	Steep and Rocky	9	9	9	9	9	9
5122	Sagebrush	14	15	13	15	15	15
	Pinyon-Juniper	32	33	32	33	33	33
	Steep and Rocky	6	6	6	6	6	6
	Barren	T	T	T	T	T	T
5123	Pinyon-Juniper	29	31	28	31	31	31
	Steep and Rocky	29	29	29	29	29	29
5124	Grassland	11	12	12	12	12	12
	Sagebrush	15	16	16	16	16	16
	Pinyon-Juniper	11	12	12	12	13	12
	Steep and Rocky	18	18	18	18	18	18
	Annuals	2	2	2	2	2	2
5125	Grassland	5	12	5	12	12	12
	Sagebrush	22	23	21	23	20	23
	Greasewood	9	15	9	15	15	15
	Pinyon-Juniper	12	14	11	14	14	14
	Barren	8	8	8	8	8	8
	Meadow	12	18	10	18	18	18
	Rabbitbrush	13	13	13	13	13	13
5126	Grassland	10	14	9	14	14	14
	Pinyon-Juniper	13	16	12	16	16	16
	Barren	3	3	3	3	3	3
	Rabbitbrush	7	10	7	10	10	10
5127	Pinyon-Juniper	19	21	21	21	21	21
5128	Grassland	16	16	16	16	16	16
	Pinyon-Juniper	14	15	14	15	15	15
5129	Sagebrush	22	24	22	24	24	24
	Pinyon-Juniper	13	14	13	14	14	14
	Steep and Rocky	14	14	14	14	14	14

Allotment Number	Vegetation Type	Existing Cover	Cover by 2000				
			PA	NA	ELG	MLFP	EORV
Allotments Proposed for Intensive Management							
5130	Sagebrush	34	34	34	34	34	34
	Pinyon-Juniper	34	34	34	34	34	34
	Steep and Rocky	34	34	34	34	34	34
5131	Sagebrush	29	30	29	30	30	30
	Pinyon-Juniper	28	30	28	30	30	30
	Steep and Rocky	10	10	10	10	10	10
5132	Shadscale	24	24	23	24	24	24
	Barren	T	T	T	T	T	T
	Meadow	81	81	81	81	81	81
	Broadleaf Trees	60	60	60	60	60	60
5133	Barren	T	T	T	T	T	T
	Broadleaf Trees	33	35	30	35	35	35
5134	Barren	T	T	T	T	T	T
	Meadow	53	53	53	53	53	53
5135	Sagebrush	22	23	22	23	23	23
	Greasewood	28	29	28	29	29	29
	Pinyon-Juniper	31	32	31	32	31	32
	Steep and Rocky	38	38	38	38	38	38
5136	Grassland	6	10	6	10	10	10
	Sagebrush	17	18	17	18	18	18
	Shadscale	12	13	12	13	13	13
	Steep and Rocky	7	7	7	7	7	7
5137	Grassland	11	12	12	12	12	12
	Sagebrush	18	20	20	20	20	20
	Greasewood	11	14	14	14	14	14
	Pinyon-Juniper	8	10	10	10	10	10
	Steep and Rocky	4	4	4	4	4	4
5138	Sagebrush	15	17	17	17	17	17
	Greasewood	13	13	13	13	13	13
	Pinyon-Juniper	11	13	13	13	13	13
	Steep and Rocky	10	10	10	10	10	10
5139	Sagebrush	15	16	16	16	16	16
	Pinyon-Juniper	11	13	13	13	13	13
	Steep and Rocky	10	10	10	10	10	10
	Half Shrub	5	7	7	7	7	7
5140	Sagebrush	21	22	22	22	20	22
	Pinyon-Juniper	16	17	17	17	16	17
	Steep and Rocky	7	7	7	7	7	7

Source: BLM Planning Documents, 1979; and Allotment Files.

APPENDIX E-10

ESTIMATED FUTURE RANGE CONDITION

Allot. No.	Veg. Type[a]	Acres (No.)	Management[b] W/O	W	W+T
Existing AMPs					
5005	011	5,984	G-	G-	G
	011S	558	G-	G-	G
	087a	83	F	F	N/A
	087b	560	P	P	N/A
	091	1,103	F	F	N/A
	131	2,407	F+	F+	N/A
	141	1,685	P	P	P
5026	021	145	P+	P+	N/A
	041a	2,453	F-	F-	G
	041b	204	F	F	F+
	041c	471	F+	F+	G
	041d	187	F	F	F
	041T	1,971	F-	F-	G
	075	3,073	P+	P+	N/A
	087	433	P	P	N/A
	091a	5,638	F	F	F
	091b	327	F	F	F+
5047	041a	1,159	F	F	G
	041b	1,994	P	P	G
	041T	1,696	F	F	G
	075	868	P	P	N/A
	091	5,169	P	P	P
5052	041	1,226	F	F	G
	041T	907	P+	F	G
	041S	249	G-	G	G
	075	2,934	P	P	N/A
	091	16,693	F	F	G-
	091T	2,167	F	F	G-
	091S	289	G	G	G
5053	041	46	F	F	G
	075	2,868	P-	F-	N/A
	091	2,448	P+	F	N/A
	091T	167	P+	F+	N/A
	091S	198	F-	G	G
5055	041	7,543	F	F+	G
	041S	2,072	G	G	G
	075	7,644	F-	F	N/A
	091	20,801	F	F	G
	091T	338	F+	F+	G
5056	041	5,871	P	P	G
	041S	1,751	F	G	G
	075	2,578	P	P	N/A
	091	18,090	P	F	G
	091S	5,800	F	G	G
5058	041	8,057	F+	F+	G
	041T	1,277	F+	F+	G
	041S	2,083	G	G	G
	075	6,157	F	F	N/A
	091	12,821	F	F+	G
	091T	1,673	F+	F+	G
	091S	253	G	G	G
5059	041	9,015	P	P+	F
	041T	1,281	F-	F	G
	041Sa	687	F	F	G
	041Sb	536	G-	G+	G+
	075	5,958	P	P	N/A
	091	10,144	G	G	G
5095	041	842	F	G	G
	075	975	F	F	N/A
	091	5,760	F	F	G
	091T	1,760	G	G	G
5107	011	59	F-	G+	G+
	041a	3,763	P+	F	F+
	041b	287	P+	G	G
	041T	5,122	F-	G	G
	041S	203	P+	F	F
	075	3,768	P+	P+	N/A
5107 (cont'd)	087	151	P-	P-	N/A
	091	11,024	F-	F	F
	091T	450	F	F	F
	091S	1,348	F-	G	G
	141	446	F-	F	F
5114	041	2,631	F	F+	G
	041T	7,230	F+	G	G+
	041S	4,568	F+	G	G+
	075	1,980	P	P	N/A
	091	9,357	F	F	F+
5115	021	159	P+	P+	N/A
	041a	5,209	F+	F+	G
	041b	328	F	F+	N/A
	041S	3,498	F	G	G+
	041-141	1,601	F-	F	F+
	075	6,120	P	P	N/A
	087	716	P	P	N/A
	091	10,096	P	P	F-
	141	1,177	P+	P+	F
5116	041	2,774	P	P+	G
	041S	1,898	G	G	G
	075	1,404	P	P	N/A
	087	363	P	P	N/A
	091	2,699	F	F	F+
	141	2,258	F	F+	G-
5118	041	5,427	F	F+	G
	041S	1,075	F	G-	G
	075	2,671	P	P	N/A
	091	13,156	F	F	N/A

Allot. No.	Veg. Type[a]	Acres (No.)	Management[b] W/O	W	W+T
Intensive Management					
5001	011	1,071	P+	G-	N/A
	075	433	F	F+	N/A
	131	2,956	F	G-	N/A
	141	104	P-	P	N/A
5002	011	971	P+	G	N/A
	075a	154	F	G	N/A
	075b	71	P	P	N/A
	087	412	P-	P+	P+
	131	3,247	P-	F-	N/A
	174	259	P-	P	N/A
5003	011	253	F-	G-	N/A
	075	22	P-	P-	N/A
	131	1,947	P+	F+	N/A
	134	276	P+	F+	N/A
	141	154	P-	P	N/A
5004	011	1,763	G-	G	G
	011T	103	G-	G	G
	087	43	P	P	N/A
	131	527	G-	G	N/A
	141	196	P+	F	N/A
	171	396	G-	G	G
5006	011	2,298	F+	G+	N/A
	087	125	P-	P-	N/A
	091	1,024	P	F	N/A
	131	434	P	F	N/A
	141	83	F-	F+	N/A
	171	64	P	F	N/A
5007	011	1,032	P	F+	F+
	075	426	P	P	N/A
	091	1,822	P	P+	N/A
	141	53	P	P	N/A
	171	2,312	P	F+	G
5008	011	1,232	G	G	G
	041	432	G-	G-	G-
	075	604	P	P	N/A
	087	71	G-	G	N/A
	091a	287	F-	F-	N/A
	091b	3,783	F-	F-	N/A
	131	105	G-	G-	N/A
	141	346	G-	G-	N/A
5009	011	2,601	G	G	G
	087	2,572	P	F	N/A
	091	4,326	F	F	G
5010	011	806	P+	G-	N/A
	041	1,450	P-	F+	N/A
	075	678	F	F	N/A
	091	4,813	P	F	N/A
	141	724	P	F	N/A
5011	011	791	F	G	N/A
	041	5,211	F	F+	G-
	075	326	P	P	N/A
	091	2,539	P	P	N/A
	131	638	F	F	N/A
	141	241	F	F+	N/A
5012	041	400	P	F+	N/A
	041T	411	G	G	N/A
	041S	225	F	G	N/A
	091a	403	P	P	N/A
	091b	1,542	P	P	N/A
5013	014	549	F-	F+	N/A
	091a	172	P	P	N/A
	091b	671	P	P	N/A
5014	041	450	P	P+	G-
	091	618	P	P+	N/A
	091T	230	F	G-	G
5015	041	89	P	P	F+
	091	272	P	P	N/A
	091T	690	F-	F+	G
5016	011	1,208	F	G	G
	011T	110	F	G	G
	041	11,251	F-	F+	G
	075	125	P	P	N/A
	091	7,635	P	P+	F-
	091T	517	F	F+	N/A
	141	1,596	F-	F+	F+
	183	336	P-	P-	F+
5017	011	615	F	G-	G+
	041	407	F	F	G+
	091	112	F	F	F+
	141a	124	F	F+	F+
	141b	139	G	G	G+
	171	358	F	F	F+
5018	041	1,406	F-	F-	G
	091	1,584	P	F	N/A
	141	38	P	F+	F+
	141R	112	F	F+	G
5019	041	1,128	F	G-	G+
	091	1,935	F	F	F+
5020	041a	4,359	F-	G	G+
	041b	649	P-	P	G+
	075	157	F	F	N/A
	091	7,536	F-	F-	F
	141	558	F-	G	G

Allot. No.	Veg. Type[a]	Acres (No.)	Management[b] W/O	W	W+T
Intensive Management					
5021	041	5,152	F-	F+	G-
	075	6,131	P+	P+	N/A
	091	12,032	P+	F	F
	091T	722	F-	G-	G
	141	327	P	F	F
5022	041	339	F-	G-	G
	075	79	P-	P	N/A
	091	102	P	F	N/A
	171	76	P+	G-	G
5023	041	109	P	G-	N/A
	075	8	P+	F	N/A
	091	123	P-	P	N/A
5024	091	285	F	G-	G+
5025	011	66	F+	G	G
	041	603	P	P+	G
	075	108	P	P	N/A
	091	1,031	F	F	N/A
5027	011	1,024	F	F+	N/A
	091	1,876	F-	F	N/A
5028	011	2,744	P+	G-	N/A
	041	1,656	P	F	G-
	091	4,507	P	F-	N/A
	171	489	P	F	G-
5029	011	1,670	F+	G	G
	041	306	F	F+	F+
	045	76	F	G	N/A
	075	18	P	P	N/A
	087	37	P	P	N/A
	091	1,478	F	G-	N/A
	131	512	G-	G-	N/A
	141	444	P+	F	N/A
5030	011	24	P	G	G+
	041	213	P	P+	F
	087	157	P	P	N/A
	091	1,493	G-	G-	N/A
5031	011	852	F	G	G
	041	2,914	F+	F+	F+
	045	318	F-	F+	F+
	075	683	P	P	N/A
	087	33	P	P	N/A
	091	5,397	G-	G-	N/A
	131	108	F-	G-	N/A
	141	399	F-	F+	N/A
5032	041	3,543	F-	G-	G
	075	452	P	P+	N/A
	091	8,432	P+	F+	N/A
5033	011	1,021	F-	G-	G
	041	1,777	F-	F+	G-
	075	244	P+	P+	N/A
	091	3,080	P+	F+	N/A
	141	202	P	P+	F
5034	011	1,157	P+	G-	N/A
	075	370	F	F	N/A
	087	166	P-	P+	N/A
	131	717	F-	F+	N/A
	134	246	P+	G-	N/A
5035	011	2,550	P	G+	G+
	081	11	N/A	N/A	N/A
	091	326	P	G	G
	141	153	P	F+	G
5036	041	1,114	P-	F-	F+
	045	1,365	F	G-	N/A
	075	139	P	P	N/A
	087	20	P-	P+	N/A
	091	2,788	P-	P+	N/A
	141	77	P	F-	F+
5037	041	5,789	P	F-	G
	041T	140	F-	F+	G
	041S	133	F+	G	G+
	045	581	F	G-	G
	075	228	P	P	N/A
	091	12,124	F-	F-	N/A
	091T	1,512	F-	F	G-
5038	011a	202	G	G	N/A
	011b	190	G	G	N/A
5039	011	563	F+	G	G
	041a	4,654	F+	G-	G
	041b	536	P	P	G-
	075	827	P	P	N/A
	091	2,887	F	F+	N/A
5040	011a	73	F+	F+	F+
	011b	68	F+	F+	F+
	041	200	F	F+	G-
	075	69	F	F	N/A
	087a	805	N/A	N/A	N/A
	087b	513	F+	F+	N/A
	091	1,427	F	F	N/A
	141	897	F-	F	F+
5041	041a	1,514	P+	F-	G-
	041b	480	P	F	G-
	041T	354	F+	F+	G-
	045	80	F	F+	F+
	075	1,372	P	P	N/A
	086	287	P+	P+	N/A
	091	2,520	F-	F+	G-
	091T	157	G	G	G+
	141	188	P	P+	F-
5043	041	2,584	F-	F+	G-
	075	990	P+	P+	N/A
	091	2,890	P+	F+	N/A
	141	115	P	F	F+

Allot. No.	Veg. Type[a]	Acres (No.)	Management[b] W/O	W	W+T
Intensive Management					
5044	021	188	F+	G	G
	041	607	F	F	G-
	075	228	P	P	N/A
	087	134	N/A	N/A	N/A
	091	793	F	F	N/A
5045	041a	664	P	F	G
	041b	476	P	F	F+
	075	76	P	P	N/A
	091	1,048	F	F	F
5046	041	542	P	P	F
	075	185	P	P	N/A
	091	2,099	P	P	F
5048	041	858	P-	P-	G
	075	26	F-	F+	N/A
	091	1,673	F-	F+	N/A
5049	041	1,032	F	F	G
	075	773	P	P	N/A
	091	1,764	F	F	F
	091T	715	F	F	F
5050	041	2,051	F	F	G
	075	1,558	P	P	N/A
	087	73	P	P	N/A
	091	2,651	F	F	F
	091T	946	F	F	F
5051	011	105	P+	F+	N/A
	041	108	F-	F+	G
	075	114	P+	P+	N/A
	087	156	P-	P	N/A
	091a	498	F	F	G
	091b	272	P+	F	N/A
	141	67	P+	F	F
5054	041	481	P+	P+	G-
	075	1,966	F-	F-	N/A
	091	3,381	F	F	G-
	091T	212	F	F	G-
5057	041	74	F-	F	G
	075	128	P	P	N/A
	091	265	F	F	N/A
5060	041a	1,058	F	F+	G
	041b	748	F	F	G
	041c	1,620	F	F+	G
	041d	129	F	F+	G
	087	56	P	P	N/A
	091	3,699	F	F	G
5061	041a	184	F	F	G
	041b	220	G	G	G
	075	113	P	P	N/A
	091	1,485	F	F	G
5062	021	28	G	G	N/A
	041a	1,880	F	F+	G
	041b	3,612	F	F+	G
	041Ta	934	F+	F+	G
	041Tb	257	F+	F+	G
	075	2,418	F	F	N/A
	091	4,648	F-	F	G-
5063	041	124	F-	F	F+
	041S	156	F-	G	G
	075	320	P	P	N/A
	087	24	P-	P-	N/A
	091	1,577	F-	F	N/A
	141	167	P	F-	F+
5064	041	3,168	F	F	G
	075	2,210	F	F	N/A
	091	4,045	F	F	F+
5065	011	18	F	F	G
	041a	200	F	F+	G
	041b	934	F	F+	G
	041c	13	F	F+	G
	087	12	P	P	N/A
	091	323	F	F	G
5066	041	137	G	G	G
	087	77	P	P	N/A
	091	556	F	F	N/A
	141	192	G	G	G
5067	041	472	P	F	F+
	075	236	P	P	N/A
	091	706	F	F	N/A
	141	82	F	F	G
5068	041	3,108	F	F	G-
	075	165	F	F	N/A
	091	1,884	P	F-	N/A
	141	930	F	F	G
5069	011	114	G	G	G+
	075	63	P	P	N/A
	087	1,521	P	P	N/A
	091	1,447	F	F	F
	141a	1,817	F-	G	G
	141b	86	P	F	N/A
5070	011	43	F	F	F
	041a	1,919	F+	F+	G
	041b	6,677	F+	G-	G
	041T	3,785	G	G	G+
	075	1,383	P	P	N/A
	084	394	P	P	N/A
	087	4,260	P	P	N/A
	091	14,512	F	F+	F+
	141	605	F	F+	F+

Allot. No.	Veg. Type[a]	Acres (No.)	Management[b] W/O	W	W+T
Intensive Management					
5071	011	327	F+	G+	N/A
	041	916	P	F-	F+
	045	1,475	F-	F+	N/A
	075	3,964	P+	P+	N/A
	091a	6,244	P+	F-	N/A
	091b	493	P+	F-	N/A
	141	249	P	F-	F
5072	011	2,387	G	G	G
	041a	14,503	F+	F+	G
	041b	9,905	F	F+	G
	041T	16,430	F	F+	G
	087a	7,359	P	P	N/A
	087b	330	N/A	N/A	N/A
	091	6,306	F	F	F+
5073	011	2,395	F	G	G+
	041	4,730	F	G-	G
	075	2,025	P	P	N/A
	087	975	P	P	N/A
	091	6,478	F	G-	G
	141	1,972	F	G-	G
5074	041	1,733	F	F	G
	041T	4,097	G	G	G+
	091	69	F-	F	N/A
5075	041	1,973	F	F+	G
	075	38	P	P	N/A
	091	1,079	P	F	F+
	141	227	P	F	F+
5076	011	208	F+	G	N/A
	021	274	G	G	G
	041a	10,528	F	G-	G
	041b	3,386	P	F+	G
	041c	421	P	F+	G
	041S	242	F	G+	N/A
	075	4,836	P	P	N/A
	087	802	P	P	N/A
	091a	5,164	F	F+	N/A
	091b	4,702	F	F+	N/A
	141	1,695	F-	F+	G
5077	041	5,675	F-	F+	G
	041T	6,196	F	G	G+
	091	672	P	P+	P+
	141	92	P-	P	P
5078	011	489	F-	G-	G
	041	7,622	F	G-	G
	075	106	P	P	N/A
	087	779	P	P	N/A
	091	832	F	G-	G
	141	242	F	G-	G
5079	041a	407	G	G	G
	041b	1,950	F	G	G
	041T	909	F	G-	G
	075	156	P	P	N/A
	087	410	P	P	N/A
	091	668	F+	G-	N/A
5080	041a	599	F	F+	G
	041b	2,113	F	F+	G
	041T	729	F	F+	G
	075	727	P-	P	N/A
	087	528	P	P	N/A
	091a	1,324	F-	F	N/A
	091b	730	F	F	N/A
5081	041	3,959	F	F	G
	041S	2,133	F	F	G
	087	116	P	P	N/A
	091	1,621	F	F	N/A
5082	041	1,073	F	F	G
	041T	781	F	F	G
	041S	417	F	F+	G
	091	570	F	F	G
5083	011	217	P+	F-	G
	041	24,600	G-	G	G+
	075	648	P	P	N/A
	087	5,992	P	P	N/A
	091	10,835	P	F	G
	131	2,934	P	P	N/A
5084	041a	1,242	F	F+	G
	041b	2,150	F-	F+	G
	075	315	P	P	N/A
	087	877	P	P	N/A
	091a	745	F	F	N/A
	091b	1,559	P	F	N/A
5085	041	1,610	F-	F+	G
	041T	286	F	G	G+A
	087	140	P-	P-	N/A
	091	912	P	P+	P+
5086	075	145	P-	P-	N/A
	091	552	P	F	F+
5087	022	160	F+	G-	G
	041Ta	320	F	F+	G
	041Tb	522	F-	F	G
	075	1,212	P	P	N/A
	087	190	P	P	N/A
	091	1,733	P	P+	F+
5088	041a	981	F+	F+	G
	041b	320	F	F+	F+
	041T	68	F+	F+	F+
	075	2,104	P	P	N/A
	091a	3,875	F	F	F
	091b	50	P	P	N/A

Allot. No.	Veg. Type[a]	Acres (No.)	Management[b] W/O	W	W+T
Intensive Management					
5089	041	1,356	P+	F	G-
	041T	169	F-	G	G
	041S	130	P+	G	G
	045	13	P-	F	F+
	075	1,250	P	P	N/A
	087	133	P	P	N/A
	091	2,431	P	F	N/A
	091T	67	F-	G	G
5090	041a	699	P+	F+	G-
	041b	197	P-	F-	N/A
	041S	269	P	G	G
	075	473	P-	P	N/A
	087	39	P	P	N/A
	091	463	P	F	F
5091	041a	243	P	P	G
	041b	813	F-	F+	G
	041T	902	F	F	G
	075a	91	P	P	N/A
	075b	779	P	P	N/A
	091a	1,454	P	P	N/A
	091b	129	F	F	N/A
	091T	726	F	F	F+
5092	041a	850	P+	F+	G
	041b	303	P	F	F+
	041Sa	1,603	F-	G+	G+
	041Sb	525	P	F	F
	075	1,266	P-	P-	N/A
	087	127	P-	P-	N/A
	091	2,673	P+	G-	G-
	091S	1,154	P+	G-	G-
5093	011	126	F-	G+	G+
	041	4,584	P+	F	G-
	041S	1,153	F-	G-	G+
	075	2,872	P+	P+	N/A
	087	627	P-	P-	N/A
	091	5,149	P+	F-	F-
	141	5,301	P	F	F
	141S	82	P+	G-	G-
5094	041	37	F-	F+	G
	041S	339	F-	F+	F
	075	2,994	P+	P+	N/A
	087	93	P-	P	N/A
	091a	2,404	F	G	G
	091b	249	P+	F	F
	091S	2,338	F-	G	G
5096	041	1,054	P+	F-	G-
	075	1,394	P	P	N/A
	091	2,425	P-	P+	F-
5097	041	2,651	P	F-	G-
	041T	508	P+	F+	G-
	075	1,533	P	P+	N/A
	091	2,977	P	P+	N/A
	091T	105	P	F-	F+
	141	47	P-	P+	F
5098	041	888	F-	F+	G-
	075	593	P	P	N/A
	091	2,189	P+	F	F
5099	041	854	F	F	G-
	041T	158	G	G	G+
	075	252	F	F	N/A
	091	961	F	F	N/A
5100	041	2,044	F	F+	G
	041T	311	G	G	G
	075	538	P	P	N/A
	091	1,149	F-	F	F
	141	738	F	F+	G-
5102	041	346	F	F+	G
	041S	807	G	G	G
	091	1,326	P	P	N/A
	141	45	F	G	G
5103	041	126	P	P	G
	091	173	F	F	N/A
5104	041	263	F-	G-	G
	075	380	P	P	N/A
	091	1,411	P+	F	N/A
	091T	54	F	F+	G
	091S	214	F+	G	G+
	141	13	P-	P	F
5105	041	671	F-	F+	F+
	041S	16	F-	F+	G
	075a	866	P+	F	N/A
	075b	2,329	P-	P-	N/A
	087	21	P-	P-	N/A
	091	5,333	F-	G-	G-
	141	70	P	F	F
5106	011	687	G+	G+	G+
	021	837	F+	F+	F+
	041	4,854	G	G	G
	041S	566	P	F-	G+
	045	449	P	F-	F-
	075	14,442	P	P	N/A
	087	1,161	P	P	N/A
	091	14,237	F+	F+	F+
	141	3,049	F	F	F+
5108	021	21	F+	G	N/A
	041	419	G-	G	G
	041Sa	89	G	G	G
	041Sb	57	P	P+	F
	075	890	P	P	N/A
	084	173	P	P	N/A
	091	714	G-	G-	G-
	141	1,159	P	P	F
	141S	25	P	P	F
5109	041	420	F-	F	F+
	041S	582	F-	G	G
	075	1,107	P	P	N/A
	087	249	P-	P-	N/A
	091	2,060	F-	F	N/A
	141	1,669	P	F-	F+

Allot. No.	Veg. Type[a]	Acres (No.)	Management[b] W/O	W	W+T
Intensive Management					
5110	041	240	F-	F+	G
	041T	1,655	F	G	G+
5111	041a	1,241	F	F	G
	041b	932	F	F	G
	087	2,790	P	P	N/A
5112	041a	1,710	G-	G	G+
	041b	1,156	F-	F+	G
	075	1,323	P	P	N/A
	087	114	P	P	N/A
	091	1,338	F	F+	N/A
5113	041	3,160	F-	G-	G
	041T	6,864	F-	G-	G
	041S	2,294	P+	G	G
	075	5,240	P-	P-	N/A
	087	312	P-	P-	N/A
	091a	2,202	F-	G	N/A
	091b	1,036	P-	P+	N/A
	091c	11,747	P+	G-	N/A
	141	1,955	F-	G-	G
5117	041a	1,000	G	G	G+
	041b	239	P-	P	G
	041T	700	F	G	G+
	075	618	F	F	N/A
	091	663	F	F	N/A
	141a	793	F	F+	F+
	141b	33	P-	P-	P
5119	021	80	F	F	N/A
	041a	8,153	F	G-	G+
	041b	27,404	P-	P	F
	041T	2,421	F	F+	G
	041S	1,314	G	G	G
	075	9,591	F	F	N/A
	087	676	P-	P-	N/A
	091	22,248	F	G	G+
	091S	369	F+	F+	F+
	141	2,187	F	F	G
	183	106	P-	P-	F
5120	041a	315	F+	G	G
	041b	1,044	F	F	G
	075	315	F	F	N/A
	091	329	F	G	N/A
5121	041	1,296	F	G	G
	075	272	P	P	N/A
	091	756	F	G	G
5122	041a	1,757	F	F+	G
	041b	242	F	F	G
	041c	91	P+	P+	G
	041d	1,065	F-	F	G
	075	576	P-	P-	N/A
	087	511	P-	P-	N/A
	091a	1,477	F	F	G
	091b	454	F	G	G
	091c	99	P-	P	N/A
5123	075	123	P	P	N/A
	091	369	F	F	F
5124	011	23	G	G	G
	041	1,418	F	G	G
	075	280	P	P	N/A
	091a	1,061	F	F	N/A
	091b	278	F	F	G
	183	54	G	G	G+
5125	011	1,324	F	G-	G-
	021	70	F	F+	N/A
	041	159	G	G	G+
	045	37	P	P+	F
	084	278	P	P	N/A
	087	3,430	P	P	N/A
	091a	4,763	F	F	N/A
	091b	2,456	P	P	N/A
	141	166	F	G	G
5126	011	79	F+	G	G
	045	224	P	F	F
	087	590	P	P	N/A
	091a	833	F	F+	F+
	091b	3,135	F	F	F
5127	091a	426	F	F	N/A
	091b	1,427	F	F	N/A
5128	011	291	F	F+	N/A
	091	740	P	F+	N/A
5129	041	911	F	F+	F+
	075	297	P	P	N/A
	091a	5,378	F	F	N/A
	091b	4,308	F	F	N/A
5130	041	243	F-	F+	G-
	075a	177	P+	F	N/A
	075b	358	P-	P-	N/A
	091	990	F-	G-	G-
5131	041	1,661	G-	G+	G+
	075	130	F	F	N/A
	091	2,739	F	F	N/A
	091T	150	F+	G-	G
5132	021	10	G	G	N/A
	087	20	N/A	N/A	N/A
	103	12	N/A	N/A	N/A
	131	35	G	G	G
5133	087	25	N/A	N/A	N/A
	103	21	G	G	G
5134	021	130	G	G	G
	087	10	P	P	N/A

Allot. No.	Veg. Type[a]	Acres (No.)	Management[b] W/O	W	W+T
Intensive Management					
5135	041a	2,837	F+	F+	G
	041b	298	F	F	G
	041T	649	F+	F	G
	041S	553	G	G	G
	075	1,456	P	P	N/A
	091	2,579	F	F	F+
	141	726	F+	F+	F+
5136	011	236	G	G+	G+
	041	60	P	P	F
	075	255	P	P	N/A
	131	30	P	F	F
5137	011	162	F+	F+	F+
	041	607	F	F+	G-
	075	291	G	F	N/A
	091	1,719	F	F	N/A
	141	526	F-	F	F+
5138	041	1,311	P+	G-	G
	075	54	P	P+	N/A
	091	1,141	P	F+	N/A
	091T	662	P+	F+	G-
	141	231	P-	F-	N/A
5139	041	2,585	P	F+	G-
	075	101	P	P+	N/A
	091	3,037	P	F+	N/A
	171	79	P	F+	G-
5140	041	3,790	F-	F+	G
	075	122	P	P	N/A
	091	10,329	P	P+	F-
	091T	1,148	F	F+	N/A

Source: Allotment Files, Farmington Area Office, BLM.

[a] Codes for vegetative subtypes as follows:

011	Short Grass	087	Other (Barren)
021	Wet Meadow	091	Pinyon-Juniper
022	Dry Meadow	103	Cottonwood
041	Big Sagebrush	131	Shadscale
045	Rabbitbrush	131	Fourwing Saltbush
075	Steep and Rocky	141	Greasewood
081	Dry Lake Bed	171	Snakeweed
084	Rock Outcrop	174	Other Half Shrub
086	Gullies	183	Annual Forbs

a, b, c, etc. = Subunits of a type
S = Areas that have been seeded
T = Areas that have received brush treatments

[b] W/O = Without grazing management
W = With grazing management
W+T = With grazing management and vegetation treatment.
G = Good range condition.
F = Fair range condition.
P = Poor range condition.
+ = The high end of designated range condition class.
- = The low end of designated range condition class.

Totals (acres):

Without grazing management.
- Good 93,089
- Fair 716,226
- Poor 467,969

With grazing management.
- Good 328,472
- Fair 707,457
- Poor 241,355

With grazing management and vegetation treatment.
- Good 660,359
- Fair 424,462
- Poor 192,463

APPENDIX E-11

POTENTIAL VEGETATIVE PRODUCTION[a/]

Allotment Number	Allotment Name	AUMs
Existing AMPs		
5005	Shumway	3,143
5026	Lonetree Mtn.	5,149
5047	Animas Comm.	3,683
5052	Tonk Mtn. Comm.	7,831
5053	Mt. Nebo	1,656
5055	Pump Mesa	13,778
5056	Middle Mesa	12,324
5058	Rosa Comm.	12,198
5059	Frances Mesa	10,584
5095	Jesus Canyon	2,940
5107	Delgadito Mesa	10,469
5114	Ice Canyon	12,349
5115	Superior Mesa	11,078
5116	Gonzales Mesa	4,447
5118	Crow Mesa	8,047
Subtotal - AMPs		119,676
Intensive Management		
5001	North Hogback	678
5002	Waterflow Comm.	385
5003	Coal Flats	583
5004	Steven's Arroyo	981
5006	Cline Arroyo	648
5007	Twin Mounds	1,463
5008	Norton Flats	1,278
5009	Cottonwood Arroyo Comm.	2,024
5010	Pinon Mesa	2,809
5011	Coal Bank Canyon	3,600
5012	Jones Canyon	931
5013	Thomas Canyon	460
5014	State Line	387

Allotment Number	Allotment Name	AUMs
Intensive Management		
5015	Coyote Hills	279
5016	Farmington Glade	7,240
5017	McDermott Wash	526
5018	La Plata Comm.	799
5019	Adobe Downs	829
5020	Hartley Springs	4,535
5021	Ruins	4,777
5022	Barton Arroyo	240
5023	Kochis	72
5024	Animas River	83
5025	Riverside Comm.	604
5027	East Farm. Comm.	1,073
5028	Crouch Mesa	3,079
5029	Crawford Mesa Comm.	1,638
5030	Aztec Comm.	383
5031	Bloomfield Comm.	3,793
5032	South Aztec	3,766
5033	Potter Canyon	2,060
5034	South Hogback	246
5035	Gonzales Comm.	1,117
5036	North Place	1,483
5037	Knickerbocker Peak Comm.	6,534
5038	Blanquito	161
5039	North Blanco Comm.	2,758
5040	Five Mile Comm.	646
5041	Pump Canyon Comm.	1,957
5042	Scattered Tracts	Unallotted for livestock use
5043	Crow Canyon	1,926
5044	Archuleta Comm.	544
5045	Hart Canyon	942
5046	Hart Mtn.	946
5048	Little Pump	864

APPENDIX E-11 (cont'd)

Allotment Number	Allotment Name	AUMs
Intensive Management		
5049	Alamo Canyon	1,531
5050	Sandstone Canyon	2,292
5051	Cutter Dam	303
5054	Rattlesnake Canyon	1,671
5057	Mentzel Mesa	165
5060	Manuel Canyon	4,020
5061	Manuel Mesa	637
5062	Frances Canyon	5,754
5063	La Baca Canyon	795
5064	Sims Mesa	3,537
5065	Lopez Canyon	933
5066	La Jara Canyon (presently unallotted)	424
5067	Cemetery Ridge	520
5068	Trujillo Spring	3,755
5069	East Armenta	1,013
5070	Jacquez Canyon Comm.	10,348
5071	Harris Mesa	3,000
5072	Angel Peak	20,281
5073	Jacquez Comm.	5,841
5074	44 Allot.	3,289
5075	Huerfanito Peak	1,427
5076	Dufers Point	10,618
5077	Huerfano	6,290
5078	S. Blanco Comm.	4,125
5079	Petrified Forest	1,412
5080	Sweetwater	2,256
5081	Blanco Trading Post	3,167
5082	Mission	1,111
5083	Largo Comm.	13,362
5084	Sheep Well	2,081
5085	Nageezi	1,185
5086	Turley	177

Allotment Number	Allotment Name	AUMs
Intensive Management		
5087	Martinez Mesa	1,296
5088	Blatzar Peak	2,272
5089	Navajo Dam	1,674
5090	Cool Water Canyon	877
5091	Manzanares Mesa	1,805
5092	Navajo City	3,128
5093	Jaramillo Comm.	9,497
5094	Ridge Road	2,268
5096	Jesus Mesa	1,544
5097	Gobernador Canyon	3,708
5098	Devils Spring	956
5099	4-Mile Canyon	1,251
5100	Gobernador Camp	2,661
5101	No allotment assigned	
5102	4-Mile Mesa	1,311
5103	Headwater Canyon	132
5104	Laguna Seca Draw	395
5105	Snyder Peak	2,148
5106	Canyon Largo	11,990
5108	Carrizo Canyon	1,343
5109	Munoz Canyon	2,647
5110	Otis	1,078
5111	South Equus	733
5112	Pioche Canyon	2,099
5113	Ensenada Mesa	13,306
5117	Carter Mesa	1,870
5119	Rancho Largo	34,792
5120	La Parita Canyon	1,140
5121	North Equus	877
5122	Eagle Rock	2,078
5123	Escrito Spring	171
5124	Gallo Canyon	1,268
5125	Kutz Canyon	3,132

APPENDIX E-11 (concluded)

Allotment Number	Allotment Name	AUMs
Intensive Management		
5126	Head Canyon	1,253
5127	Gallegos Canyon	608
5128	Horn Canyon	310
5129	Stewart Canyon	---[b]
5130	Santo Nino	648
5131	Bonito	---[b]
5132	Rivershore	---[b]
5133	Jewett Valley	---[b]
5134	San Juan River	16
5135	La Jara Mesa	4,068
5136	Hargis Arroyo	211
5137	Chico	1,104
5138	North Glade	1,076
5139	Coach	1,559
5140	Flora Vista	4,775
Subtotal - Non-AMPs		320,622
Total		440,298

Source: BLM calculations, 1979.

Note: [a] Values in this table reflect climax production.
[b] Range-site descriptions not available for mapping units in these allotments. Potential production cannot be computed.

APPENDIX F

SOILS

APPENDIX F-1

INTERPRETATIONS FOR SELECTED USES OF MAJOR SOIL

Soil or Land Type	Shrink Swell	LIMITATION FOR USE AS: Septic Tank Filter Fields	Sewage Lagoons Silting Ponds	Sanitary Landfills	Shallow Excavations	Embankments	SUITABILITY AS A SOURCE OF: Topsoil	Roadfill	Sand/ Gravel
Argiborolls, fine	high	severe-depth, permeability	severe-steep slopes, stones	severe-depth, too stoney	severe-depth, steep slopes, stones	shrink-swell, stones	poor-clayey, stones, slope	poor-too clayey	unsuited
Argiborolls, fine-loamy	moderate	severe-depth, steep slopes	severe-steep slopes, stones	severe-depth, too stoney	severe-depth, steep slopes, stones	steep slopes, stones	poor-stones, steep slopes	poor-shrink-swell, stones	unsuited
Badland									
Christianburg	high	severe permeability	slight	severe-too clayey	severe-too clayey	low strength, shrink-swell	poor-too clayey	poor-low strength, shrink-swell	unsuited
Del Rio	high	severe-permeability	moderate-slope	moderate-too clayey	slight	compressibility	fair-thin layer	poor-shrink-swell	unsuited
Doak	moderate	severe-permeability	0-2% slight 2%+ moderate-slope	slight	slight	shrink-swell low strength	fair-too clayey	poor-low strength	unsuited
Farb	low	severe-depth	severe-depth, seepage	severe-depth	severe-depth	piping, erodes easily	poor-thin layer	poor-thin layer	unsuited
Fruitland	low	slight	severe-seepage	slight	slight	piping, seepage, erodes easily	good	fair-low strength	poor-excess fines

APPENDIX F-1 (Cont'd)

Soil or Land Type	Shrink Swell	LIMITATION FOR USE AS: Septic Tank Filter Fields	Sewage Lagoons Silting Ponds	Sanitary Landfills	Shallow Excavations	Embankments	SUITABILITY AS A SOURCE OF: Topsoil	Roadfill	Sand/ Gravel
Galisteo	high	severe-permeability	severe-floods	severe-floods	severe-floods	low strength, compressible	poor-thin layer	poor-shrink-swell, low strength	unsuited
Hilly gravelly land									
Navajo	high	severe-permeability, floods	severe-floods	severe-too clayey, floods	severe-too clayey, floods	shrink-swell, low strength	poor-too clayey	poor-shrink-swell, low strength	unsuited
Penistaja	moderate	slight	moderate-seepage	slight	slight	low strength, piping	fair	fair-low strength	unsuited
Persayo	high	severe-depth	severe-depth	severe-depth	moderate-depth	thin-layer compressible	poor-thin layer, too clayey	poor-thin layer, shrink-swell	unsuited
Pinavetes	low	slight	severe-seepage	moderate-seepage	severe - cut - banks cave	seepage, piping	poor-too sandy	good	poor/ unsuited
Rockland									
Sheppard	low	slight	severe-seepage	moderate-seepage	severe - cut - banks cave	seepage, piping	poor-too sandy	good	poor/ unsuited

APPENDIX F-1 (Concluded)

Soil or Land Type	Shrink Swell	LIMITATION FOR USE AS: Septic Tank Filter Fields	Sewage Lagoons Silting Ponds	Sanitary Landfills	Shallow Excavations	Embankments	SUITABILITY AS A SOURCE OF: Topsoil	Roadfill	Sand/ Gravel
Shiprock	low	slight	severe-seepage	moderate-seepage	slight	piping, seepage	fair	fair-low strength	poor/ unsuited
Silver	moderate	severe-permeability	moderate-slope	moderate-too clayey	moderate-too clayey	low strength, compressible	poor-too clayey	poor-low strength	unsuited
Travessilla	low	severe-depth	severe-depth	severe-depth	severe-depth	piping, thin layer erodes easily	poor-thin layer	poor-thin layer	unsuited
Turley	moderate	severe-permeability	moderate-piping	moderate-too clayey	moderate-clayey	low strength, piping	fair-too clayey	poor-low strength, shrink-swell	unsuited
Vermejo	high	severe-permeability	severe-floods	moderate-floods	severe-too clayey	piping, erodes easily	poor-too clayey excess salt	poor-shrink-swell, low strength	unsuited
Werlow	moderate	moderate-permeability	severe-seepage	moderate-seepage	moderate-cutbanks cave	piping, low strength	fair-thin layer	fair-shrink-swell	poor-excess fines

Source: USDA, Soil Conservation Service, 1977.

APPENDIX F-2

PHYSICAL AND CHEMICAL CHARACTERISTICS OF SOILS

Soil, Soil Association or Land Type	Percent of Association	Slope Percent	Depth to Bedrock (in.)	Texture			Permeability (In./Hr.)	Erosion Hazard		Reaction (pH)	Waterholding Capacity (In./In.)	Salinity (MMHOS/CM)
				Surface	Underlying Layer	Substratum		Water	Wind			
Persayo-Farb												
Persayo	35	5-30	10-20	silty clay loam	silty clay loam	shale	0.2 - 0.6	High	Moderate	7.9 - 8.4	0.15-0.19	2 - 8
Farb	35	5-30	10-20	sandy loam	sandy loam	sandstone	2.0 - 6.0	High	High	7.4 - 8.4	0.05-0.11	<2
Sundown	10	1-9	60	loamy sand	loamy sand	loamy sand	6.0 -20.0	Moderate	Very High	7.4 - 8.4	0.03-0.10	2 - 4
Shiprock	5	0-5	60	fine sandy loam	sandy loam	sandy loam	0.6 - 6.0	Moderate	High	7.4 - 8.4	0.09-0.12	2 - 4
Badland	10	10-75+	-----	-----	-----	-----	-----	High	Slight	-----	-----	-----
Rockland	5	30-75+	-----	-----	-----	-----	-----	Low	Slight	-----	-----	-----
2. Werlow-Fruitland-Turley												
Werlow	25	0-3	60	loam	sandy clay loam	fine sandy loam	0.6 - 2.0	Moderate	Moderate	7.4 - 8.4	0.10-0.15	<4
Fruitland	10	1-9	60	sandy loam	sandy clay loam	sandy loam	0.6 - 6.0	Moderate	High	7.4 - 8.4	0.08-0.17	<4
Turley	15	0-5	72	silty clay loam	clay loam	silty clay loam	0.06- 0.2	Moderate	Very High	7.4 - 9.0	0.14-0.19	2 - 4
Azfield	15	1-5	60	fine sandy loam	sandy clay loam	sandy loam	0.6 - 6.0	Moderate	High	7.4 - 8.4	0.11-0.17	<4
Sundown	5	1-9	60	loamy sand	loamy sand	loamy sand	6.0 -20.0	Moderate	Very High	7.4 - 8.4	0.03-0.10	2 - 4
Other soils, land types	30	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3. Doak-Shiprock												
Doak	55	0-5	60	fine sandy loam	sandy clay loam	loam	0.2 - 2.0	Moderate	Moderate	7.4 - 9.0	0.13-0.19	1 - 4
Shiprock	30	0-5	60	fine sandy loam	sandy loam	sandy loam	0.6 - 6.0	Moderate	High	7.4 - 8.4	0.09-0.12	2 - 4
Other soils, land types	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4. Shiprock-Sheppard												
Shiprock	35	0-5	60	fine sandy loam	sandy loam	sandy loam	0.6 - 6.0	Moderate	High	7.4 - 8.4	0.09-0.12	2 - 4
Sheppard	20	1-9	60	fine sand	loamy fine sand	loamy fine sand	6.0 -20.0	High	Very High	7.9 - 9.0	0.05-0.08	<2
Nageezi	10	0-5	10-20	sandy loam	sandy loam	sandy loam	2.0 - 6.0	Moderate	High	7.9 - 8.4	0.10-0.13	<4
Kinnear	12	1-9	60	fine sandy loam	sandy clay loam	sandy loam	0.6 - 2.0	High	High	7.4 - 8.4	0.11-0.15	<4
Camborthids	10	1-9	60	fine sandy loam	sandy clay loam	sandy loam	0.6 - 6.0	High	High	6.6 - 7.4	0.11-0.14	<4
Other soils, land types	13	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

APPENDIX F-2 (Cont'd)

Soil, Soil Association or Land Type	Percent of Association	Slope Percent	Depth to Bedrock (in.)	Texture			Permeability (In./Hr.)	Erosion Hazard		Reaction (pH)	Waterholding Capacity (In./In.)	Salinity (MMHOS/CM)
				Surface	Underlying Layer	Substratum		Water	Wind			
5. Hilly gravelly land												
Hilly gravelly land	75	5-75	-----	-----	-----	-----	-----	Moderate	Slight	-----	-----	-----
Doak	5	0-5	60	loam	clay loam	loam	0.2 - 2.0	Moderate	Moderate	7.4 - 9.0	0.13-0.19	1 - 4
Grandview	5	0-5	60	loam	clay loam	loam	0.2 - 2.0	Moderate	Moderate	7.9 - 9.0	0.15-0.19	1 - 4
Other soils, land types	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
6. Badland-Rockland												
Badland	50	0-75+	-----	-----	-----	-----	-----	High	Slight	-----	-----	-----
Rockland	20	-----	-----	-----	-----	-----	-----	Low	Slight	-----	-----	-----
Alluvial land	10	1-9	-----	-----	-----	-----	-----	High	Moderate	-----	-----	-----
Persayo	5	5-30	10-20	silty clay loam	silty clay loam	shale	0.2 - 0.6	High	Moderate	7.9 - 8.4	0.15-0.19	2 - 8
Other soils, land types	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7. Turley-Badland												
Turley	35	0-5	72	silty clay loam	clay loam	silty clay loam	0.06- 0.2	Moderate	Very High	7.4 - 9.0	0.14-0.19	2 - 4
Badland	20	30-75+	-----	-----	-----	-----	-----	High	Slight	-----	-----	-----
Farb	20	5-30	10-20	sandy loam	sandy loam	sandstone	2.0 - 6.0	High	High	7.4 - 8.4	0.05-0.11	<2
Azfield	10	0-5	60	fine sandy loam	sandy clay loam	sandy loam	0.6 - 6.0	Moderate	High	7.4 - 8.4	0.11-0.17	1 - 4
Other soils, land types	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
8. Penistaja-Pinavetes-Rockland												
Penistaja	45	3-5	60	fine sandy loam	sandy clay loam	sandy loam	0.6 - 6.0	Moderate	High	6.6 - 8.4	0.09-0.16	-----
Pinavetes	25	3-9	60	loamy sand	loamy fine sand	sand, loamy sand	6.0 -20.0	High	Very High	7.9 - 9.0	0.05-0.08	0 - 2
Rockland	15	9-60	-----	-----	-----	-----	-----	Low	Slight	-----	-----	-----
Other soils, land types	15	3-15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

APPENDIX F-2 (Cont'd)

Soil, Soil Association or Land Type	Percent of Association	Slope Percent	Depth to Bedrock (in.)	Texture			Permeability (In./Hr.)	Erosion Hazard		Reaction (pH)	Waterholding Capacity (In./In.)	Salinity (MMHOS/CM)
				Surface	Underlying Layer	Substratum		Water	Wind			
9. Christianburg-Navajo		0-3										
Christianburg	40		60	clay	clay	clay	0.06- 0.6	Moderate	High	7.4 - 9.0	0.13-0.18	4 - 8
Navajo	23		72	clay	clay	clay, silty clay	0.06- 0.6	Low	High	7.9 - 8.4	0.14-0.16	8 - 16
Gullied	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Other soils, land types	22		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10. Turley-Persayo-Badland												
Persayo	35	5-25	10-20	silty clay loam	silty clay loam	shale	0.2 - 0.6	High	Moderate	7.9 - 8.4	0.15-0.19	2 - 8
Turley	35	0-5	72	silty clay loam	clay loam	silty clay loam	0.06- 2.0	Moderate	Very High	7.4 - 9.0	0.14-0.19	2 - 4
Badland	15	9-75	-----	-----	-----	-----	-----	High	Slight	-----	-----	-----
Other soils, land types	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
11. Vermejo-Galisteo												
Vermejo	40	0-3	60	silty clay loam	silty clay	silty clay	0.06- 0.6	High	Moderate	7.9 - 9.0	0.15-0.21	2 - 4
Galisteo	20	0-3	60	clay loam	silty clay	clay	0.06- 2.0	Low	Moderate	7.9 - 9.0	0.15-0.21	<2
Manzano	10	0-5	60	loam	clay loam	loam	0.2 - 2.0	Moderate	Moderate	7.4 - 8.4	0.16-0.19	2 - 4
Gullied land	10	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Other soils, land types	20	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
12. Argiborolls												
Aridic Argiborolls (fine)	55	20-40	30-50	cobbly clay loam	clay	shale	0.2 - 2.0	Moderate	Moderate	6.6 - 8.4	0.14-0.20	2 - 4
Aridic Argiborolls (fine-loamy)	20	20-40	30-50	cobbly clay loam	sandy clay loam	sandstone	0.6 - 2.0	Moderate	Moderate	6.6 - 8.4	0.13-0.19	<2
Rockland	10	20-65+	-----	-----	-----	-----	-----	Low	Slight	-----	-----	-----
Other soils, land types	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

APPENDIX F-2 (Concluded)

Soil, Soil Association or Land Type	Percent of Association	Slope Percent	Depth to Bedrock (in.)	Texture			Permeability (In./Hr.)	Erosion Hazard		Reaction (pH)	Waterholding Capacity (In./In.)	Salinity (MMHOS/CM)
				Surface	Underlying Layer	Substratum		Water	Wind			
13. Argiborolls-Rockland												
Aridic Argiborolls (fine)	45	20-75+	30-50	cobbly clay loam	clay	shale	0.2 - 2.0	Moderate	Moderate	6.6 - 8.4	0.14-0.20	2 - 4
Rockland	40	30-75+	-----	-----	-----	-----	-----	Low	Slight	-----	-----	-----
Other soils, land types	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
14. Travessilla-Rockland												
Travessilla	40	3-25	6-20	fine sandy loam	fine sandy loam	sandstone	2.0 - 6.0	High	High	7.4 - 8.4		<2
Rockland	25	30-75+	-----	-----	-----	-----	-----	Low	Slight	-----	-----	-----
Other soils, land types	55	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
15. Del Rio-Silver												
Del Rio	45	1-9	60	loam	clay loam	loam, clay loam	0.2 - 2.0	Moderate	Moderate	7.4 - 8.4	0.17-0.17	<2
Silver	30	0-5	60	clay loam	clay loam	loam, clay loam	0.06- 2.0	Moderate	Moderate	7.3 - 8.4	0.16-0.20	<2
Travessilla	10	3-30	6-20	fine sandy loam	fine sandy loam	sandstone	2.0 - 6.0	High	High	7.4 - 8.4	0.06-0.17	<2
Other soils, land types	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Source: USDA, Soil Conservation Service, 1977.

APPENDIX F-3

SEDIMENT YIELD BY ALTERNATIVE [a/]
(Acre-Feet Per Year)

Allotment Number	(Ac. Ft./Year) Existing	PA	NA	ELG	MLFP	EORV
Allotments with Existing AMPs						
5005	16.13	12.56	15.97	12.56	12.56	12.56
5026	19.76	15.33	19.76	15.18	15.33	15.33
5047	11.10	8.98	11.10	8.80	9.88	8.98
5052	29.67	21.32	30.26	21.11	23.24	21.32
5053	7.58	5.10	7.58	4.95	4.95	4.95
5055	49.01	34.36	49.50	33.33	41.23	34.36
5056	40.34	27.51	40.34	26.68	29.44	27.51
5058	35.25	25.72	35.25	24.75	25.72	25.72
5059	32.70	22.89	32.37	22.66	23.58	22.89
5095	12.94	8.46	12.04	8.21	9.64	8.46
5107	26.04	19.03	25.00	19.03	19.60	19.03
5114	23.49	18.90	23.49	18.90	18.90	18.90
5115	32.31	23.08	31.99	23.08	25.62	23.08
5116	13.17	9.15	13.17	9.06	9.70	9.15
5118	25.50	18.27	25.50	17.54	18.64	18.27
Total	374.09	270.66	373.32	265.84	288.03	270.51
Percent Change from Existing		28	<1	29	23	28

Allotment Number	(Ac. Ft./Year) Existing	PA	NA	ELG	MLFP	EORV
Allotments Showing Improvement[d/]						
5001	6.83	5.75	6.56	5.75	5.75	5.75
5002	19.10	18.52	18.72	18.52	18.52	18.52
5003	3.79	2.61	3.71	2.61	2.61	2.61
5006	8.39	6.49	8.05	6.49	6.49	6.49
5008	17.33	15.82	17.16	15.98	15.82	15.82
5010	10.44	9.23	10.34	9.23	9.23	9.23
5011	7.27	5.89	7.05	5.89	6.01	5.89
5014	1.10	.93	1.09	.93	.95	.93
5024	.45	.31	.45	.31	.31	.31
5031	14.73	10.28	14.29	10.28	10.28	10.28
5034	7.96	7.57	7.80	7.57	7.57	7.57
5038	.34	.25	.33	.25	.25	.25
5039	11.29	8.93	11.18	8.66	9.56	8.93
5040	5.16	4.31	4.95	4.31	4.31	4.31
5066	1.04	.75	1.02	.75	.75	.75
5070	58.26	54.91	57.68	53.81	57.11	54.91
5071	28.61	21.88	28.32	20.57	21.88	21.88
5087	4.69	2.32	3.50	2.27	2.46	2.32
5092	8.72	6.40	8.63	6.34	6.53	6.40
5110	.79	.78	.78	.78	.78	.78
5111	19.43	19.32	18.85	19.13	19.13	19.32
5124	3.43	2.49	3.33	2.49	2.47	2.49
5127	1.80	1.52	1.76	1.52	1.52	1.52
5137	2.89	2.26	2.66	2.26	2.26	2.26
5138	3.03	2.41	2.91	2.41	2.41	2.41
5139	8.43	5.94	8.01	5.94	5.94	5.94
5140	15.48	12.49	15.17	12.49	12.86	12.49
Total	270.78	230.36	264.31	227.54	233.76	230.36
Percent Change from Existing		15	2	16	14	15

Allotment Number	(Ac. Ft./Year) Existing	PA	NA	ELG	MLFP	EORV
Allotments Showing Decrease or No Change[d/]						
5004	3.12	2.43	3.12	2.43	2.43	2.43
5007	7.38	6.51	7.38	6.71	6.51	6.51
5009	19.28	18.70	19.47	18.70	18.70	18.70
5012	3.03	2.35	3.03	2.40	2.35	2.35
5013	1.32	1.03	1.32	1.03	1.03	1.03
5015	.76	.71	.76	.71	.74	.71
5016	20.63	19.54	21.46	19.54	20.71	19.54
5017	1.36	1.05	1.36	1.05	1.05	1.05
5018	4.62	3.24	4.62	3.24	3.34	3.24
5019	4.87	3.38	4.87	3.38	3.41	3.38
5020	14.48	11.44	14.48	11.44	11.44	11.44
5021	66.04	60.95	66.04	60.95	62.17	60.95
5022	.44	.36	.44	.36	.36	.36
5023	.37	.26	.37	.26	.26	.26
5025	3.91	3.49	3.91	3.49	3.49	3.49
5027	2.72	2.06	2.72	2.06	2.06	2.06
5028	13.38	9.60	13.65	9.60	9.60	9.60
5029	5.02	3.66	5.07	3.66	3.66	3.66
5030	4.69	3.69	4.69	3.69	3.69	3.69
5032	16.80	12.15	16.80	12.15	12.15	12.15
5033	7.69	5.66	7.69	5.66	5.88	5.66
5035	2.82	2.39	2.82	2.39	2.39	2.39
5036	7.81	6.02	7.81	6.02	7.28	6.02
5037	22.40	16.60	22.40	16.10	19.26	16.60
5041	8.51	5.84	8.51	5.84	5.84	5.84
5043	7.85	5.46	7.85	5.40	5.52	5.46
5044	1.87	1.29	1.87	1.29	1.29	1.29
5045	2.30	1.80	2.30	1.76	1.93	1.80
5046	3.78	2.75	3.78	2.64	2.86	2.75
5048	2.78	2.00	2.78	1.86	2.04	2.00
5049	4.38	3.19	4.38	3.16	3.25	3.19

APPENDIX F-3 (Cont'd)

Allotment Number	(Ac. Ft./Year) Existing	PA	NA	ELG	MLFP	EORV
Allotments Showing Decrease or No Change[d/]						
5050	8.62	6.04	8.62	6.04	6.34	6.04
5051	2.05	1.55	2.09	1.55	1.55	1.55
5054	8.63	5.75	8.63	5.69	6.38	5.75
5057	.57	.39	.57	.39	.39	.39
5060	7.50	5.43	7.50	5.32	5.81	5.43
5061	2.67	1.83	2.67	1.67	1.98	1.83
5062	15.34	10.56	15.34	10.45	11.09	10.56
5063	2.87	2.05	2.87	2.05	2.36	2.05
5064	10.71	7.67	10.71	7.67	8.59	7.67
5065	1.18	.92	1.18	.86	.96	.92
5067	1.59	1.17	1.59	1.17	1.17	1.17
5068	5.33	4.00	5.33	3.88	4.04	4.00
5069	15.40	15.28	15.40	15.28	15.59	15.28
5072	92.95	91.30	92.95	84.91	87.65	87.65
5073	21.31	16.51	21.31	16.51	17.01	16.51
5074	2.48	2.42	2.48	2.37	2.42	2.42
5075	2.03	1.80	2.03	1.76	1.80	1.80
5076	32.12	24.55	32.12	24.06	24.80	24.55
5077	6.22	5.94	6.22	5.94	5.94	5.94
5078	6.12	5.60	6.12	5.60	5.60	5.60
5079	7.81	7.53	7.81	7.30	7.76	7.53
5080	7.19	5.97	7.19	5.61	6.63	5.97
5081	4.63	4.07	4.63	3.99	4.07	4.07
5082	1.97	1.66	1.97	1.63	1.66	1.66
5083	81.62	77.21	81.62	75.67	77.98	77.21
5084	11.18	10.36	11.18	10.15	10.67	10.36
5085	2.73	2.59	2.73	2.59	2.59	2.59
5086	1.01	.68	1.01	.68	.68	.68
5088	9.34	6.49	9.34	5.85	6.49	6.49
5089	5.98	4.34	5.98	4.30	4.64	4.34

Allotment Number	(Ac. Ft./Year) Existing	PA	NA	ELG	MLFP	EORV
Allotments Showing Decrease or No Change[d/]						
5090	2.42	1.72	2.44	1.69	1.72	1.72
5091	5.88	4.28	5.88	4.07	4.32	4.28
5093	22.63	15.35	22.86	15.20	15.96	15.35
5094	11.73	8.02	11.73	7.86	8.10	8.02
5096	6.37	4.37	6.37	4.29	4.59	4.54
5097	8.69	6.14	8.95	6.14	6.14	6.14
5098	5.17	3.46	5.17	3.36	3.84	3.46
5099	2.13	1.55	2.13	1.52	1.55	1.55
5100	4.07	2.99	4.07	2.96	3.11	2.99
5102	2.27	1.77	2.27	1.73	1.82	1.77
5103	.37	.25	.37	.25	.25	.25
5104	3.48	2.30	3.48	2.30	2.35	2.30
5105	14.10	9.27	14.10	9.08	9.27	9.27
5106	53.12	36.16	53.12	35.08	36.52	36.16
5108	4.67	3.07	4.67	2.82	3.07	3.07
5109	6.66	4.73	6.66	4.59	4.97	4.73
5112	8.21	5.23	8.21	5.18	5.28	5.23
5113	39.11	28.33	39.11	27.20	28.33	28.33
5117	4.39	3.05	4.39	2.96	3.14	3.05
5119	76.82	54.92	76.82	53.82	56.02	54.92
5120	2.09	1.36	2.13	1.33	1.37	1.36
5121	3.92	2.26	4.04	2.26	2.26	2.26
5122	12.94	11.47	13.07	11.47	11.47	11.47
5123	.57	.42	.58	.42	.42	.42
5125	27.43	26.28	28.53	26.28	27.07	26.28
5126	6.04	4.32	6.16	4.19	4.19	4.19
5128	1.05	.99	1.05	.99	.99	.99
5129	11.32	8.53	11.32	8.36	8.36	8.36
5130	2.13	1.51	2.13	1.51	1.51	1.51

Allotment Number	(Ac. Ft./Year) Existing	PA	NA	ELG	MLFP	EORV
Allotments Showing Decrease or No Change[d/]						
5131	4.48	2.89	4.48	2.89	2.89	2.89
5134	.08	.08	.08	.08	.08	.08
5135	9.00	6.57	9.00	6.57	6.64	6.57
5136	.52	.41	.52	.41	.41	.41
Total	1,009.42	815.31	1,012.83	798.77	829.34	811.53
Percent Change from Existing		19	<1	21	18	20

Summary: Allotments	Existing	PA	NA	ELG	MLFP	EORV
Existing AMPs	374.09	270.66	373.32	265.84	288.03	270.51
Improvement	270.78	230.36	264.31	227.54	233.76	230.36
No Change/Decrease	1,009.42	815.31	1,012.83	798.77	829.34	811.53
Total for Planning Unit	1,654.29	1,316.33	1,650.46	1,292.15	1,351.13	1,312.40
Average Percent Change		20	<1	22	18	21

Source: BLM Calculations, 1980.

Notes: [a/] Refer to Appendix C for methodologies used in calculating these figures.

[b/] PA-Proposed Action, NA-No Action Alternative, ELG-Elimination of Livestock Grazing Alternative, MLFP-Maximization of Livestock Forage Production Alternative, EORV-Enhancement of Other Resource Values Alternative.

[c/] Decimal placing is for calculation purposes only; measurements were not made with this level of accuracy.

[d/] Based on No Action Vegetative Cover Percentage Analysis.

APPENDIX G

WILDLIFE

APPENDIX G-1

MAJOR VERTEBRATE SPECIES IN THE SAN JUAN PLANNING UNIT POTENTIALLY AFFECTED BY THE PROPOSED ACTION[a/]

I. Aquatic Habitat [includes rivers (189 miles), lakes and reservoirs (17,469 acres)].

Mammals

Mink	(Mustela vison energumenos)[a/]

Birds

Bald eagle	(Haliaeetus leucocephalus)[b/]
Peregrine falcon	(Falco peregrinus anatum)[b/]
Canada goose	(Branta canadensis)
Snow goose	(Chen hyperborea)
Mallard	(Anas platyrhynchos)
Pintail	(Anas acuta)
Gadwall	(Anas strepera)
American widgeon	(Mareca americana)
Blue-winged teal	(Anas discors)
Cinnamon teal	(Anas cyanoptera)
Green-winged teal	(Anas carolinensis)
Ruddy duck	(Oxvura jamaicensis)
Common merganser	(Mergus merganser)
Shoveler	(Spatula clypeata)
Redhead	(Aythya americana)
Canvasback	(Aythya valisineria)
Ring-necked duck	(Aytha collaris)
Greater scaup	(Aythya marila)
Lesser scaup	(Aythya affinis)
Common goldeneye	(Bucephala clangula)

Buffelhead	(Bucephala albeola)	
American coot	(Fulica americana)	

Fish (C = cold water fishing, W = warm water fishing, I = introduced)

Rainbow trout	(Salmo gairdneri)	CI
Brown trout	(Salmo trutta)	CI
Cutthroat	(Salmo clarki)	C
Kamloops	(Salmo gairdneri kamloops)	C
Dolly Varden	(Salvelinus malma)	C
Kokanee salmon	(Oncorhynchus nerka kennerlyi)	CI
Coho salmon	(Oncorhynchus kisutch)	C
Northern pike	(Essox leveus)	C
Roundtail chub	(Gila robusta)[b/]	C
Spiny sculpin	(Cottus bairdi)	CW
Channel catfish	(Ictalurus punctatus)	W
Blue catfish	(Ictalurus furcatus)	W
Black bullhead	(Ameiurus melas)	W
Carp	(Cyprinus carpio)	CW
Bluegill	(Lepomis macrochirus)	W
Green sunfish	(Lepomis cyanellus)	W
Largemouth bass	(Micropterus salmoides)	W
Small mouth bass	(Micropterus dolomiev)	W
Colorado River squawfish	(Ptychocheilus lucius)[b/]	W

II. Riparian and Wetland Habitat (includes mud flats, willow and cottonwood floodlands, marshes and swamps, and streambanks). Vegetative types include elements of the meadows and broad-leaf trees (4,893 acres).

Mammals

Mink	(Mustela vison energumenos)[a/]

Birds

Mississippi kite	(Ictinia mississippiensis)[b/]
Peregrine falcon	(Falco peregrinus anatum)[b/]

III. Grassland (includes irrigated areas, cultivated fields and farm and urban areas). Vegetative types include grasslands, annuals and half-shrubs (185,795 acres).

Mammals

Elk	(Cervus canadensis)
Mule deer	(Odocoileus hemionus)
Pronghorn antelope	(Antilocapra americana)
Whitetailed prairie dog	(Cynomys gunnisoni)[c/]

Birds

Chukar	(Alectoris graeca)
Ring-necked pheasant	(Phasianus colchicus)
Rock dove/domestic pigeon	(Columba livia)
Mourning dove	(Zenaidura macroura)
Red-headed woodpecker	(Melanerpes erythracephalus)[b/]
Bairds sparrow	(Ammodramus bairdii)[b/]

IV. Sagebrush-Greasewood (includes arid and semi-arid lands). Vegetative types include sagebrush, shadscale, greasewood, barren lands (545,868 acres).

Mammals

Pronghorn antelope	(Antilocapra americana)

Birds

Scaled quail	(Callipepla squamata)
Gambel's quail	(Lophortyx gambelii)
Mourning dove	(Zenaidura macroura)

V. Steep and rocky (includes canyons and foothills, some barren terrain). Vegetative types include rabbitbrush and four-wing saltbrush (150,677 acres).

Mammals

Whitetailed prairie dog	(Cynomys gunnisoni)[c/]
Elk	(Cervus canadensis)

Mule deer	(Odocoileus hemionus)
Pronghorn antelope	(Antilocapra americana)
Barbary sheep	(Ammotragus lervia)

Birds

Peregrine falcon	(Falco peregrinus)b/
Scaled quail	(Callipepla squamata)
Chukar	(Alectoris graeca)
Band-tailed pigeon	(Columba fasciata)

VI. Pinyon-juniper Woodlands [includes chiefly pinyon-juniper types, some elements of sagebrush and rabbitbrush (525,258 acres)].

Mammals

Mule deer	(Odocoileus hemionus)
Barbary sheep	(Ammotragus lervia)
Elk	(Cervus canadensis)

Birds

Peregrine falcon	(Falco peregrinus)b/
Wild turkey	(Meleagris gallopavo)
Mourning dove	(Zenaidura macroura)
Band-tailed pigeon	(Columba fasciata)

Source: Modified after Unit Resource Analysis, Step II, (USDI, BLM, 1979f)

Notes: a/ For a more complete listing of species in the planning unit, consult the Unit Resource Analysis, Step II, (USDI, BLM, 1979f) in either the BLM Albuquerque District Office or the Farmington Area Office.

b/ For status of threatened and endangered species, refer to Appendix G-2.

c/ Even though the whitetailed prairie dog is common in much of the Planning Unit, an important endangered predator species with which it is associated, the black-footed ferret (Mustela nigripes), has never been observed in the Planning Unit (Hubbard, et al., 1979).

APPENDIX G-2

THREATENED OR ENDANGERED SPECIES OF FISH AND WILDLIFE
THAT MAY BE EXPECTED TO OCCUR IN THE
SAN JUAN PLANNING UNIT

Species	Listings Federal (F) State (S)[a/]	Season of Use	Status	Sightings[b/]
Mammals:				
Black-footed ferret (Mustela nigripes)	F, S-I	year-long	Endangered	none
Mink (Mustela vison energumenos)	S-II	year-long	Threatened	2H'
Birds:				
Mississippi kite (Ictinia mississippiensis)	S-II	vagrant	Threatened	2R
Bald eagle (Haliaeetus leucocephalus)	F, S-I	migration	Endangered	1H, 7R
Peregrine falcon (Falco peregrinus anatum)	F, S-I	year-long	Endangered	4R, 1R'
Red-headed woodpecker (Melanerpes erythrocephalus caurinus)	S-II	summer	Threatened	1R, 1R'
Baird's sparrow (Ammodramus bairdii)	S-II	migration	Threatened	1R
Fish:				
Roundtail chub (Gila robusta robusta)	S-II	year-long	Threatened	1R, 3R'
Colorado River squawfish (Ptychocheilus lucius)	F, S-I	year-long	Endangered	1H' 1R',

Source: Hubbard, et al., 1979.

Notes: a/ S-I: Species whose prospects of survival or recruitment in the state are in jeopardy.
S-II: Species whose prospects of survival or recruitment in the state are in jeopardy in the foreseeable future.

b/ Sightings: H' - verified record, pre-1960, H - unverified record, pre-1960: R' - verified record, 1960 or later, R - unverified record, 1960 or later.

6840.13 (931)

NOV 14 1978

Memorandum

To: Regional Director, USFWS, Region No. 2, Albuquerque, New Mexico

From: State Director, BLM, Santa Fe, New Mexico

Subject: List Request for the San Juan Grazing Environmental Statement

Relative to the November 10, 1978 amendment to the 1973 Endangered Species Act, the Bureau of Land Management has determined that the proposed actions of the San Juan Grazing Environmental Statement would be "construction." A brief description of the proposed action and alternatives and location maps are enclosed.

This is a formal request for a list(s) of threatened and endangered species (plants and animals) and any species proposed for listing which may occur within the considered area.

If there are any questions, please contact Lee Upham, New Mexico State Office, Endangered Species Coordinator (phone FTS-476-1231).

/s/ LARRY L. WOODARD

acting

Enclosures

cc:
WO (240),
Albuquerque DM,
Dick Diener, NM-1,
LUpham

A summary of the proposed action and alternatives is as follows:

I. Proposed Action

A. Amount of Forage Allocated Grazing and Other Uses

The San Juan Planning Unit has 138 allotments, 15 of which are currently managed under an Allotment Management Plan (AMP). Allotment acreages in the area vary from 46 to 74,549 acres, with allotment grazing qualifications varying from 18 to 8,616 Animal Unit Months (AUM's). Range inventories conducted on the area in 1977-78 indicate an increase in total active licensed use (actual use).

B. Proposed level of Grazing Management and How Grazing is to be Managed

The San Juan Planning Unit is presently considered suitable for grazing by cattle, sheep, goats, and/or horses. Grazing use in the area is predominately by cattle. Livestock grazing would continue to be authorized on all but two allotments within the Planning Unit. Both allotment surveys indicate insufficient forage for livestock grazing.

Presently there are 15 existing AMP's in the ES area, all of which are managed under a deferred rotation grazing system. Under the proposed action, the grazing systems for all existing AMP's would remain unchanged. AUM allocations would be reduced on all but two of the AMP's. The proposed AUM reductions are below current authorized qualifications but above the average active (actual) licensed use.

The remaining 121 non-AMP allotments are proposed for a more intensive grazing management program which would require a minimum spring (April 1 - May 31) and summer (July 15 - September 15) rest, for one year out of three. The proposed spring and summer rest would provide for improved cool and warm season plant vigor, reproduction, and seeding establishment. In many cases, provisions for meeting the proposed rest requirements can be met by altering season of use during one of the three years, resting individual pastures if fenced, removing the livestock to non-federal lands during these rest periods, or developing AMP grazing systems with BLM cooperation.

C. Season of Use and Class of Livestock

Season of use and class of livestock would remain unchanged on all allotments except those where livestock grazing would be eliminated.

D. Continuing Studies and Adjustments

Studies would be initiated according to BLM Manual 4413. These studies would focus on actual livestock grazing use, forage utilization, range condition trends, and climatic conditions. Data on wildlife and

other resources would be collected. Where objectives are not being met, the grazing system would be modified. Such modifications could include changes in the grazing use, season of use, additional range developments, or any combination of these.

During periods of drought or other emergencies, adjustments in livestock numbers would be made to guard against damage to the vegetal-soil resource. In instances where adjustments are needed, the operator will be contacted and where possible adjustments would be jointly agreed to. If an agreement cannot be reached, then the needed adjustment would be put into effect by decision.

E. Support Facilities

Construction of range improvements and vegetation manipulation are required to implement the proposed action. Improvements include earthen reservoirs, pipelines, drinking troughs, wells, well facilities (e.g., windmills or water pumps), storage tanks, springs slickrock catchments, cattleguards, fences, and pumps. All developments are designed by the BLM Albuquerque District engineer and Area Manager to fit a particular area, but for the most part, designs are standard throughout BLM. Details of project construction or development may be reviewed in the BLM Albuquerque District Office.

The enclosed series of maps (I through IV, scale ½ inch = 1 mile) are marked-up to show the approximate locations of the support facilities listed above planned for the EIS area. The locations were obtained from overlays prepared during the course of developing the San Juan planning documents. Both wildlife and livestock are shown on this series of charts.

Vegetation treatment proposals in the EIS area consist of seed only, chain only, chain and seed, and plow and seed. Areas that need seeding have deteriorated to a point where no suitable forage species occurs. Typically, a mixture of cool - and warm - season forage species would be used to help stabilize the overall annual production. Livestock grazing would be deferred a minimum of two growing seasons on all treated ones to permit establishment of vigorous new vegetation. Areas nominated for vegetative treatment are indicated on marked-up charts I through IV. Specific locations within each area are not known but will be determined when specific management plans are developed for each allotment.

In conjunction with the planning, certain areas in the ES area were nominated to receive watershed treatments. These are indicated on marked-up charts A through E. The treatments include: (1) intensive livestock management, (2) mechanical treatment of sagebrush, pinyon and juniper, (3) chemical spray herbicide for brush control, (4) watershed tillage practices, (5) watershed control structure devices, and (6) restricted use. The charts were developed in the same manner as charts I-IV. Specific range treatment locations within each allotment are not presently known, but will be determined when species management plans are developed in each allotment.

Before any range development is implemented on public land, the BLM must adhere to certain procedures and design specifications to protect all resources. These are mandated through certain laws, executive orders, and manual requirements as listed below. Design features for construction of the proposed range developments are as follows:

1. Roads or trails would be constructed only where existing roads and trails could not be used (BLM policy).

2. Archaeological clearance would be required for each project site before construction (BLM policy; National Historic Preservation Act of 1966; National Environmental Policy Act of 1969; Executive Order 11593; 36 CFR 800).

3. Threatened or endangered species survey and clearance would be required for each project site before construction (Endangered Species Act and BLM Manual 6840).

4. Disturbance of soil and vegetation at all project sites would be held to an absolute minimum (BLM policy; BLM Manual 6300).

5. Areas where the soils would be disturbed would be restored to blend into the surrounding soil surface (BLM policy; BLM Manual 6300).

6. Visual resources contrast ratings would be completed in the survey and design stage of all proposed developments (BLM policy; BLM Manual 6300), and appropriate mitigating measures would be implemented to meet the Visual Resource Management (VRM) class objectives for the area in which the action is located.

7. All storage tanks would be buried when feasible.

8. Soil maps and the watershed specialist would be consulted for on-site investigations to determine areas of least impact, i.e., avoid soils on steep slopes and soils in the critical and severe erosion condition classes.

9. Construction of all fences would be in accordance with design constraints in BLM Manual 1737.

10. No action would be taken in roadless areas determined to have wilderness characteristics until the complete wilderness inventory and study required by Section 603 of the Federal Land Policy and Management Act of 1976 (FLPMA) is completed and Congress has acted. No action would be taken which would impair the suitability of such areas for preservation as wilderness.

11. Before construction, the BLM would prepare a site-specific environmental assessment to analyze environmental impacts.

Maintenance of range developments on public lands is subject to policy and guidance contained in BLM Manual Section 7120. Fences and cattleguards built primarily for livestock management would be maintained by allottees under agreements complying with BLM guidelines.

The BLM would maintain all BLM-owned water developments. Allottees' obligations would be limited to periodic inspections and reporting of damage or malfunction. The BLM would develop a schedule for inspection and maintenance sufficient to meet these intervals: fences and cattleguards, 5 years; earthen reservoir, 3 years; springs, well facilities, pipelines, and wildlife waters, annually. Adjustments in maintenance schedules would be made as needed for individual projects.

II. No Action Alternative

Under this alternative, livestock forage allocation would be 66,165 AUM's, a 37 percent reduction from the adjudicated grazing qualifications. Forage allocation to wildlife and wild horses would be the same as the short-term allocation under the proposed action (5,799 AUM's to wildlife and 276 AUM's to wild horses).

Implementation of this alternative would involve the following:

1. The 15 allotments which have implemented AMP's would be intensively managed, while those not have AMP's would be managed as they are at present. No new AMP's would be developed.

2. New range improvements would be limited to those allotments under existing AMP's. Existing range improvements would continue to be maintained.. Range improvements remaining to be completed on existing AMP's are: fence, 3 miles; wells, 2 each, one with a pump and one with a windmill; pipeline, 8¼ miles; storage tank, 1 each (20,000 gallon); drinking troughs, 6 each.

III. Elimination of Livestock Grazing Alternative

Under this alternative, all domestic livestock would be removed from the public lands in order to reserve all available forage for resource values other than livestock grazing. All forage would be set aside for wildlife use, and for the enhancement of watershed and visual resources.

There would be 5,799 AUM's allocated to wildlife in the short-term and 16,630 AUM's in both the short-term and long-term.

Implementation of this alternative would entail the following:

1. Livestock grazing would be eliminated on 926,909 acres of public land, and 108,001 AUM's of livestock preference on public lands would be cancelled. No new AMP's would be developed, and those now implemented would be cancelled.

2. State and private land which is intermingled with public land would have to be used in a way that would avoid grazing trespass on public lands; livestock could be controlled by herding or by fencing the private and State land. It is estimated that 1,526 miles of new fence on the boundaries of private and State land would have to be built by ranchers to exclude livestock from public land. Construction would cost approximately $3,000 per mile. Trailing permits would be issued so livestock could travel across public lands to reach National Forest, State and private lands.

3. No range developments would be maintained or constructed unless necessary for other BLM programs such as wildlife or watershed. Range developments, which serve no useful purpose would be removed from the public land.

IV. Maximization of Livestock Forage

This alternative would provide an intensive program of range management techniques to achieve optimum forage production for livestock. This would involve vegetation manipulation on 184,477 acres to convert existing sagebrush and pinyon-juniper vegetation to grassland.

The authorized initial livestock use would be the same as for the short-term proposed action 69,335 AUM's. As a result of vegetation manipulations, there would be an additional 16,584 AUM's available for livestock use in 3 to 5 years for a total of 85,919 AUM's allocated to livestock use in short-term and 106,895 AUM's in the long-term (2000). Under this alternative, forage allocation to wildlife and wild horses would be the same as under the proposed action.

The range improvements and intensive management described under the proposed action would also be implemented. Specific operations under this alternative are as follows:

1. Adjustments in the authorized stocking rates would be made as in the proposed action and in accordance with the 1976 thru 1978 BLM Resource Inventory to balance proper forage utilization with soil and vegetation production.

2. Intensive management would be implemented on 138 allotments, and present management would continue on 15 allotments with AMP's as described on the proposed action. In addition, 184,477 acres would receive vegetation manipulation to convert pinyon-juniper or sagebrush into more productive forage plants for livestock use. Vegetation manipulation projects would include: 25,705 acres of sagebrush spraying, 106,889 acres of pinyon-juniper mechanical treatment, and 51,883 acres of sagebrush mechanical treatment.

   The type of mechanical treatment to be used is not known at this time. This will be determined when specific plans are developed for each allotment.

V. Enhancement of Other Resource Values

This alternative considers a lower level of livestock use than the proposed action in order to enhance other resource values. Livestock numbers under this alternative would be the same as under the proposed action on all good condition range. Grazing use of the forage produced on fair and poor condition ranges would be reduced by 50 percent to enhance wildlife habitat, visual resources, and watershed protection.

Initial livestock forage allocation under this alternative would be 43,668 AUM's, a 37 percent reduction from the 69,335 AUM's allocated under the proposed action. The reduction would be borne by the 773,480 acres of fair and poor condition public lands in the Planning Unit, as there would be no reduction on the 153,429 acres of good condition range. Forage allocation for wildlife and wild horses and the support facilities described in the proposed action would remain unchanged both in the short and long-term.

As under the proposed action, this alternative would include a monitoring program to measure the effects of the livestock reduction on plant composition, vigor, and ground cover, providing for modification of this alternative action as necessary.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

POST OFFICE BOX 1306
ALBUQUERQUE, NEW MEXICO 87103

December 12, 1979

MEMORANDUM

TO : State Director, Bureau of Land Management, New Mexico State Office, P.O. Box 1449, Santa Fe, New Mexico 87501

FROM : Regional Director, Region 2 (SE)

SUBJECT: Species List re. San Juan Grazing Environmental Statement

This is in reply to your November 14, 1979 letter which requested information about species which are listed or proposed to be listed as threatened or endangered as provided by the Endangered Species Act. Your area of interest includes San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

As provided by Section 7(c) of the Endangered Species Act Amendments of 1978, the Fish and Wildlife Service is required to furnish a list of those species, both proposed and listed, that may be affected by Federal construction activities.

Upon receipt of the Fish and Wildlife Service's species list, the Federal agency authorizing, funding, or carrying out the construction action is required to conduct a biological assessment for the purpose of identifying listed species which are likely to be affected by such action. Proposed species are included on the list even though they do not have legal protection under the Act. Their inclusion recognizes that they may be listed anytime and have the portent to cause delays or modifications to the proposed action. In light of this, we recommend that those species be included in the biological assessment.

The biological assessment shall be completed within 180 days after receipt of the species list, unless it is mutually agreed to extend this period. The biological assessment should include: 1) the results of a comprehensive survey; 2) results of any studies undertaken to determine

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the nature and extent of any impacts on identified species; 3) consideration of the cumulative effects upon the species or its critical habitat; 4) study methods used; 5) difficulties encountered in obtaining data and completing the proposed study; 6) conclusions including recommendations as to further studies, and 7) any other relevant information.

For purposes of providing interim guidance, the Fish and Wildlife Service considers construction projects to be any action conducted or contracted by the Federal agency designed primarily to result in the building or erection of man-made structures, such as dams, buildings, roads, pipelines, and the like. This includes consideration of major Federal actions such as permits, grants, licenses, or other forms of Federal authorization or approval which may result in construction and which significantly affect the quality of the human environment. In addition, other actions that have the potential of becoming or are controversial, may be considered as construction.

If the biological assessment reveals that the proposed project may affect listed species, the formal consultation process shall be initiated by writing to the Regional Director, Region 2, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103. If no affect is evident, there is no need for further consultation. We would, however, appreciate the opportunity to review your biological assessment.

The attached sheets provide information on species which may occur in the proposed project area. If we may be of further assistance, do not hesitate to call upon us (505-766-3972; FTS 474-3972).

Attachments

cc: Phoenix Area Office (SE), Phoenix, Arizona
Field Supervisor, Ecological Services, Albuquerque, New Mexico

San Juan Grazing
SAN JUAN COUNTY, NEW MEXICO

Knowlton cactus (Pediocactus knowltonii) - A very small, inconspicuous rounded cactus with short spines and stems which range up to four centimeters long. Plants are about the size of half of the last joint of a finger. This species barely protrudes above ground level and retracts underground during the dry season. Found in the extreme northeast corner of San Juan County at elevations of 6,000 - 6,500 feet. Habitat consists of mesic sites in the pinyon-juniper woodland with gravelly, moderately dark-colored sandy loam soils in the Rock Land - Travessila association.

Mesa-verde cactus (Sclerocactus mesae-verdae) - A small cactus found on the hills and mesas of the Navajoan Desert, appears restricted to exposed seams of Mancos clay at elevations of 4,000 - 6,000 feet. Within the Mixed Saltbrushes - Alkali Sacaton Association, at least sometimes.

Bald eagle (Haliaeetus leucocephalus) - Occurs as a migrant or winters in project area. This species is relatively widespread and even locally common especially along major streams and reservoirs eg. San Juan River and Navajo Lake.

Black-footed ferret (Mustela nigripes) - A large nocturnal weasel whose historical range coincided with prairie dogs. Current range in southwestern states uncertain; most likely occurs with Gunnison and Zuni prairie dogs in grasslands and mountain basins.

Peregrine falcon (Falco peregrinus) - Occurs as a migrant. No eyries are known to exist in this area.

PROPOSED SPECIES

None.

CRITICAL HABITAT

None.

RIO ARRIBA COUNTY

LISTED SPECIES

Bald eagle, black-footed ferret, and peregrine falcon as for San Juan County.

PROPOSED SPECIES

None.

CRITICAL HABITAT

None.

SANDOVAL COUNTY

LISTED SPECIES

Bald eagle, black-footed ferret, and peregrine falcon as for San Juan County.

PROPOSED SPECIES

None.

CRITICAL HABITAT

None.

APPENDIX G-3 (Concluded)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

POST OFFICE BOX 1306
ALBUQUERQUE, NEW MEXICO 87103

January 3, 1980

MEMORANDUM

TO: State Director, Bureau of Land Management, New Mexico State Office, P. O. Box 1449, Santa Fe, New Mexico 87501

Deputy

FROM: Regional Director, Region 2

Subject: Our Memorandum of December 12, 1979, Providing a Species List for the San Juan Grazing Project

On the December 12, 1979, memorandum, the Colorado squawfish (Ptychocheilus lucius) was inadvertently omitted from the listing of species listed under provisions of the Endangered Species Act.

Project impact evaluation should also include this species. Hopefully this addition will not result in undue complications with project evaluation. My apologies are extended to you for this oversight.

If I may be of further assistance, do not hesitate to call (505) 766-3972; FTS 474-3972.

cc: Phoenix Area Office (SE)
Field Supervisor, (ES) Albuquerque, NM

APPENDIX H

LIVESTOCK GRAZING

APPENDIX H-1

ACREAGE AND FORAGE ALLOCATION BY ALLOTMENT

Allot. No.	Allot. Name	Acres - Public Land	Acres - Other Ownership	Total Allotmt. Acreage	Present Use (AUMs) Total AUMs (Pvt., State, Fed'l)	Wildlife	Preference (Fed'l)	Average Licensed Use (6-yr. avg.) a/	Proposed Forage Allocations (Fed'l AUMS) Livestock	Wildlife	Changes from Preference (AUMs)	Changes from Avg. Licensed Use (AUMs)	Projected Goal by Year 2000 (AUMs) Livestock	Wildlife
Existing AMPs														
5005	Shumway	7,807	4,573	12,380	1,250	0	1,020	742C	950	14	-70	+208	1,020	43
5026	Lonetree Mtn.	9,745	5,157	14,902	1,749	0	1,137	777C	384	74	-753	-393	600	224
5047	Animas Comm.	8,274	2,612	10,886	864	0	710	247C	492	27	-218	+245	800	72
5052	Tank Mtn. Comm.	20,803	3,662	24,465	1,944	0	1,632	1,227C	1,358	46	-274	+131	1,632	139
5053	Mt. Nebo	5,727	0	5,727	320	0	320	164C	109	25	-211	-55	160	76
5055	Pump Mesa	28,767	9,631	38,398	3,108	0	2,755	1,575C c/	1,318	436	-1,437	-257	2,000	1,319
5056	Middle Mesa	21,469	12,621	34,090	1,932	1,920	1,565	1,537C d/ 21H	1,565	765	0	+7	1,565	2,312
5058	Rosa Comm. b/	22,535	9,786	32,321	1,508	2,280	1,381	1,150C	1,381	1,036	0	+231	1,500	2,057
5059	Frances Mesa	15,409	12,212	27,621	2,964	300	1,704	1,149C e/ 16H	812	300	-892	-353	1,100	906
5095	Jesus Canyon	8,022	1,315	9,337	648	0	528	441C d/	382	43	-146	-59	528	129
5107	Delgadito Mesa	19,202	7,419	26,621	2,757	0	1,801	1,540C	1,516	64	-285	-24	1,801	192
5114	Ice Canyon	21,851	3,915	25,766	4,632	274	3,984	2,173C 60H	2,109	304	-1,875	-124	3,000	920
5115	Superior Mesa	24,980	3,924	28,904	3,600	0	3,147	2,279C	2,072	458	-1,075	-207	3,147	1,499
5116	Gonzales Mesa	8,316	3,080	11,396	1,500	417	1,095	927C 27H	597	102	-498	-357	688	311
5118	Crow Mesa	17,502	4,827	22,329	2,348	0	1,945	1,452C d/	899	60	-1,046	-571	1,100	182
Subtotal - AMPs		240,409	84,734	325,143	31,124	5,191	24,724	17,380C 142H	15,944	3,754			20,641	10,381

Allot. No.	Allot. Name	Acres - Public Land	Acres - Other Ownership	Total Allotmt. Acreage	Present Use (AUMs) Total AUMs (Pvt., State, Fed'l)	Wildlife	Preference (Fed'l)	Average Licensed Use (6-yr. avg.) [a/]	Proposed Forage Allocations (Fed'l AUMS) Livestock	Wildlife	Changes from Preference (AUMs)	Changes from Avg. Licensed Use (AUMs)	Projected Goal by Year 2000 (AUMs) Livestock	Wildlife
Intensive Management														
5001	North Hogback	3,680	884	4,564	466	0	370	214C [e/]	275	0	-95	+61	370	0
5002	Waterflow Comm.	4,278	836	5,114	382	0	358	283C	375	4	+17	+92	488	28
5003	Coal Flats	1,604	1,048	2,652	240	0	156	77C [e/]	201	7	+45	+124	222	21
5004	Steven's Arroyo	1,729	1,299	3,028	432	0	288	214C	137	5	-151	-77	288	15
5006	Cline Arroyo	3,507	521	4,028	367	0	272	80C [d/]	303	11	+31	+223	325	33
5007	Twin Mounds	5,157	488	5,645	765	0	756	273C	276	13	-489	+3	500	39
5008	Norton Flats	3,601	3,259	6,860	689	0	254	102C	316	14	+62	+214	407	43
5009	Cottonwood Arroyo Comm.	6,978	2,521	9,499	1,500	0	828	505C	411	21	-417	-94	500	59
5010	Pinon Mesa	4,744	3,727	8,471	657	0	419	128C	338	10	-81	+210	419	30
5011	Coal Bank Canyon	3,965	5,781	9,746	916	0	362	146C	90	93	-272	-56	180	280
5012	Jones Canyon	2,559	422	2,981	457	0	352	221C	75	20	-277	-146	125	45
5013	Thomas Canyon	802	590	1,392	312	0	206	81C [d/]	0	4	-206	-81	0	8
5014	State Line	704	594	1,298	166	0	166	76S	60	11	-106	-16	100	23
5015	Coyote Hills	1,023	28	1,051	88	0	88	69C	223	21	+135	+154	240	42
5016	Farmington Glade	11,364	11,414	22,778	2,982	0	1,012	962C 18H	647	38	-365	-333	1,012	115
5017	McDermott Wash	1,560	195	1,755	240	0	228	139C	173	7	-55	+34	228	21
5018	La Plata Comm.	2,778	362	3,140	313	0	284	185C	224	7	-60	+39	284	21
5019	Adobe Downs	1,783	1,280	3,063	276	0	168	32C 15H	207	1	+39	+160	220	3

Allot. No.	Allot. Name	Acres - Public Land	Acres - Other Ownership	Total Allotmt. Acreage	Present Use (AUMs) Total AUMs (Pvt., State, Fed'l)	Wildlife	Preference (Fed'l)	Average Licensed Use (6-yr. avg.) a/	Proposed Forage Allocations (Fed'l AUMS) Livestock	Wildlife	Changes from Preference (AUMs)	Changes from Avg. Licensed Use (AUMs)	Projected Goal by Year 2000 (AUMs) Livestock	Wildlife
Intensive Management														
5020	Hartley Springs	5,054	8,205	13,259	1,041	5	436	418C d/	503	42	+67	+85	600	128
5021	Ruins	16,694	7,670	24,364	1,261	0	828	777S	1,060	10	+232	+283	1,060	29
5022	Barton Arroyo	409	187	596	132	0	108	36C	38	0	-70	+2	108	3
5023	Kochis	160	80	240	36	0	36	59C	8	0	-28	-51	36	3
5024	Animas River	262	23	285	36	0	27	2C	39	5	+12	+37	50	15
5025	Riverside Comm.	1,000	808	1,808	192	0	120	49C	82	5	-38	+33	120	15
5027	East Farm. Comm.	2,567	333	2,900	549	0	516	365C	231	1	-285	-134	250	3
5028	Crouch Mesa	3,840	5,556	9,396	1,032	0	480	308C	141	8	-339	-167	200	25
5029	Crawford Mesa Comm.	4,035	506	4,541	815	0	749	481C	413	8	-336	-68	700	25
5030	Aztec Comm.	1,287	600	1,887	150	0	150	64C	134	5	-16	+70	150	15
5031	Bloomfield Comm.	8,387	2,317	10,704	1,014	0	1,014	448C	448	8	-566	0	680	25
5032	South Aztec	9,533	2,894	12,427	930	0	725	384S d/	650	5	-75	+266	725	15
5033	Potter Canyon	5,535	789	6,324	460	0	409	370S	437	10	+28	+67	450	29
5034	South Hogback	1,952	704	2,656	133	0	99	61C f/ 8S	158	0	+59	+89	160	3
5035	Gonzales Comm.	1,992	1,048	3,040	413	0	323	189C 19H	374	8	-45	+166	419	25
5036	North Place	4,183	1,320	5,503	564	0	408	190C f/	533	7	+125	+343	533	21
5037	Knickerbocker Peak Comm.	15,179	5,328	20,507	2,000	12	1,494	556S	1,521	16	+27	+965	1,600	50

Allot. No.	Allot. Name	Acres - Public Land	Acres - Other Ownership	Total Allotmt. Acreage	Present Use (AUMs) Total AUMs (Pvt., State, Fed'l)	Wildlife	Preference (Fed'l)	Average Licensed Use (6-yr. avg.) [a/]	Proposed Forage Allocations (Fed'l AUMS) Livestock	Wildlife	Changes from Preference (AUMs)	Changes from Avg. Licensed Use (AUMs)	Projected Goal by Year 2000 (AUMs) Livestock	Wildlife
Intensive Management														
5038	Blanquito	392	0	392	96	0	96	43C	66	1	-30	+23	108	3
5039	North Blanco Comm.	8,792	675	9,467	982	0	961	473C	494	12	-467	+21	961	43
5040	Five Mile Comm.	3,602	450	4,052	308	0	218	118C	299	2	+81	+181	400	7
5041	Pump Canyon Comm.	5,927	1,025	6,952	774	0	669	308C	492	5	-177	+184	669	15
5042[g/]	Scattered Tracts	8,554	Scattered acreage unallotted to livestock (acreage figure not included in total)											
5043	Crow Canyon	4,613	1,966	6,579	468	0	365	321S	522	7	+157	+201	522	21
5044	Archuleta Comm.	1,451	499	1,950	72	0	60	55C	108	5	+48	+53	109	15
5045	Hart Canyon	2,123	141	2,264	175	0	175	88S	213	7	+38	+125	240	21
5046	Hart Mtn.	1,475	1,351	2,826	320	0	192	0C 5H	81	10	-111	+76	125	29
5048	Little Pump	1,591	966	2,557	204	0	156	91C	75	2	-81	-16	156	5
5049	Alamo Canyon	3,574	710	4,284	324	12	240	165C[e/]	269	23	+29	+104	269	70
5050	Sandstone Canyon	6,304	975	7,279	732	12	648	385C	662	21	+14	+277	869	62
5051	Cutter Dam	885	435	1,320	258	5	246	122C[g/]	49	18	-197	-73	75	53
5054	Rattlesnake Canyon	3,899	2,141	6,040	510	0	327	167C	180	44	-147	+13	327	132
5057	Mentzel Mesa	280	187	467	60	0	60	60C	0	15	-60	-60	0	20
5060	Manuel Canyon	4,122	3,188	7,310	1,308	0	804	123C 6H 457S	555	16	-249	-31	804	48

Allot. No.	Allot. Name	Acres - Public Land	Acres - Other Ownership	Total Allotmt. Acreage	Present Use (AUMs) Total AUMs (Pvt., State, Fed'l)	Wildlife	Preference (Fed'l)	Average Licensed Use (6-yr. avg.)[a]	Proposed Forage Allocations (Fed'l AUMS) Livestock	Wildlife	Changes from Preference (AUMs)	Changes from Avg. Licensed Use (AUMs)	Projected Goal by Year 2000 (AUMs) Livestock	Wildlife
Intensive Management														
5061	Manuel Mesa	1,597	405	2,002	276	0	216	186C	146	13	-70	-40	216	38
5062	Frances Canyon	7,797	5,980	13,777	1,205	0	688	622C 14H[d]	467	34	-221	-169	688	101
5063	La Baca Canyon	1,400	968	2,368	349	0	244	53C	90	16	-154	+37	150	50
5064	Sims Mesa	4,750	4,673	9,423	1,320	0	951	741C 281S	564	27	-387	-458	800	81
5065	Lopez Canyon	1,220	280	1,500	252	0	204	96S	108	3	-96	+12	204	38
5066	La Jara Canyon	642	320	962	0	0	0	No auth. livestock	17	17	+17	+17	25	52
5067	Cemetery Ridge	367	1,129	1,496	96	0	72	36C 1H	13	3	-59	-24	20	20
5068	Trujillo Spring	2,414	3,673	6,087	975	0	396	193C 8H	226	9	-170	+25	400	26
5069	East Armenta	5,001	47	5,048	936	0	936	103C 8H[e]	347	10	-589	+236	550	26
5070	Jacquez Canyon Comm.	28,424	5,154	33,578	4,740	0	3,828	2,170C 69H	2,956	20	-872	+717	3,828	30
5071	Harris Mesa	12,498	1,170	13,668	1,200	0	960	674C[d]	679	16	-281	+5	750	59
5072	Angel Peak	51,509	5,711	57,220	7,236	0	6,420	2,070C	3,433	48	-2,987	1,363	4,500	145
5073	Jacquez Comm.	13,170	5,405	18,575	1,848	0	1,146	1,146S	1,356	14	+210	+210	1,356	43
5074	44 Allot.	4,092	1,807	5,899	1,752	0	1,164	420C 4H[e]	763	10	-401	+339	800	32
5075	Huerfanito Peak	2,075	1,242	3,317	516	0	264	99C	150	10	-114	+51	200	30

Allot. No.	Allot. Name	Acres - Public Land	Acres - Other Ownership	Total Allotmt. Acreage	Present Use (AUMs) Total AUMs (Pvt., State, Fed'l)	Wildlife	Preference (Fed'l)	Average Licensed Use (6-yr. avg.)[a]	Proposed Forage Allocations (Fed'l AUMS) Livestock	Wildlife	Changes from Preference (AUMs)	Changes from Avg. Licensed Use (AUMs)	Projected Goal by Year 2000 (AUMs) Livestock	Wildlife
Intensive Management														
5076	Dufers Point	25,562	6,696	32,258	3,726	0	3,306	1,655C[e] 54H	1,559	22	-1,747	-150	2,050	66
5077	Huerfano	10,675	1,960	12,635	2,457	0	1,805	383C[f]	826	8	-979	+443	1,000	66
5078	S. Blanco Comm.	5,353	4,717	10,070	1,008	0	867	874S	646	5	-221	-228	867	15
5079	Petrified Forest	3,223	1,277	4,500	528	0	348	0C[f]	243	7	-105	+243	348	21
5080	Sweetwater	5,041	1,709	6,750	1,100	0	684	320C[d]	231	7	-453	-89	480	21
5081	Blanco Trading Post	6,112	1,717	7,829	827	0	659	948C	638	0	-21	-310	659	0
5082	Mission	1,536	1,305	2,841	600	0	300	162C	126	0	-174	-36	300	0
5083	Largo Comm.	30,861	14,365	45,226	4,871	0	3,942	119C 563H 2,792S&G	2,891	9	-1,051	-583	3,509	28
5084	Sheep Well	5,960	928	6,888	828	0	648	36C 41H 39S&G	306	7	-342	+190	440	21
5085	Nageezi	758	2,190	2,948	96	0	96	82C[d]	50	0	-46	-32	96	0
5086	Turley	347	350	697	132	0	72	17C[d]	21	0	-51	+4	40	0
5087	Martinez Mesa	3,631	506	4,137	415	0	391	232C	269	10	-122	+37	391	29
5088	Baltzar Peak	6,110	1,288	7,398	604	0	546	259C	233	14	-313	-26	350	43
5089	Navajo Dam	3,131	2,418	5,549	612	0	308	282C 5H	131	7	-177	-156	250	21
5090	Cool Water Canyon	968	1,172	2,140	240	0	132	72C 3H	65	5	-67	-10	100	15

Allot. No.	Allot. Name	Acres - Public Land	Acres - Other Ownership	Total Allotmt. Acreage	Present Use (AUMs) Total AUMs (Pvt., State, Fed'l)	Wildlife	Preference (Fed'l)	Average Licensed Use (6-yr. avg.) [a/]	Proposed Forage Allocations (Fed'l AUMS) Livestock	Wildlife	Changes from Preference (AUMs)	Changes from Avg. Licensed Use (AUMs)	Projected Goal by Year 2000 (AUMs) Livestock	Wildlife
Intensive Management														
5091	Manzanares Mesa	5,045	92	5,137	528	0	528	284C	276	7	-252	-8	528	20
5092	Navajo City	5,837	2,664	8,501	972	0	661	273C	361	14	-300	+88	461	43
5093	Jaramillo Comm.	8,250	11,644	19,894	2,712	0	1,152	1,009C 37H	953	5	-199	-93	1,152	15
5094	Ridge Road	7,505	949	8,454	708	0	659	453C [f/]	502	24	-157	+49	659	72
5096	Jesus Mesa	3,849	1,024	4,873	440	10	336	199C	103	10	-233	-96	225	29
5097	Gobernador Canyon	4,335	3,486	7,821	1,296	0	804	344C 98H [d/]	138	14	-666	-304	250	43
5098	Devils Spring	2,949	721	3,670	300	0	252	209C 8H	126	22	-126	-91	252	65
5099	4-Mile Canyon	1,239	986	2,225	241	0	96	47C 2H	44	7	-52	-5	50	20
5100	Gobernador Camp	2,363	2,417	4,780	420	0	230	140C 133S [f/]	157	10	-73	-116	230	29
5101	No allotment assigned													
5102	4-Mile Mesa	1,799	725	2,524	312	0	168	168C 11H	145	10	-23	-34	168	29
5103	Headwater Canyon	129	170	299	48	0	35	27C	4	0	-31	-23	10	0
5104	Laguna Seca Draw	2,319	16	2,335	298	0	292	214C	170	43	-122	-44	200	132
5105	Snyder Peak	7,925	1,381	9,306	550	0	430	97C 20H	310	66	-120	+193	430	199
5106	Canyon Largo	35,107	5,175	40,282	5,124	0	4,368	2,157C 41H 1,045S	3,192	127	-1,176	-51	4,368	381

Allot. No.	Allot. Name	Acres - Public Land	Acres - Other Ownership	Total Allotmt. Acreage	Present Use (AUMs) Total AUMs (Pvt., State, Fed'l)	Wildlife	Preference (Fed'l)	Average Licensed Use a/ (6-yr. avg.)	Proposed Forage Allocations (Fed'l AUMS) Livestock	Wildlife	Changes from Preference (AUMs)	Changes from Avg. Licensed Use (AUMs)	Projected Goal by Year 2000 (AUMs) Livestock	Wildlife
Intensive Management														
5108	Carrizo Canyon	2,929	618	3,547	480	0	396	312C	351	43	-45	+39	396	129
5109	Munoz Canyon	4,581	1,506	6,087	1,031	0	716	397C	418	25	-298	+21	716	74
5110	Otis	1,655	240	1,895	63	0	55	13C g/	180	4	+125	+167	180	11
5111	South Equus	4,163	800	4,963	456	0	372	37C 60H	245	0	-127	+148	378	0
5112	Pioche Canyon	4,728	913	5,641	744	0	624	295C c/	227	43	-397	-68	350	127
5113	Ensenada Mesa	29,486	5,324	34,810	5,040	552	4,385	1,662C	2,563	260	-1,822	+901	3,500	784
5117	Carter Mesa	2,111	1,935	4,046	636	0	336	122C 8H	332	31	-4	+202	336	98
5119	Rancho Largo	47,829	26,720	74,549	14,640	0	8,616	5,200C 46H d/	3,752	116	-4,864	1,494	5,000	416
5120	La Parita Canyon	1,049	954	2,003	264	0	156	151C	58	13	-98	-93	100	40
5121	North Equus	990	1,334	2,324	300	0	132	57C 85H	63	0	-69	-79	85	0
5122	Eagle Rock	3,696	2,576	6,272	660	0	252	206C	279	14	+27	+73	300	43
5123	Escrito Spring	307	185	492	84	0	48	23C	9	5	-39	-14	20	15
5124	Gallo Canyon	2,538	576	3,114	372	0	300	74S	133	0	-167	+59	250	0
5125	Kutz Canyon	11,388	1,295	12,683	1,172	0	1,172	1,172C m/	677	14	-495	-495	800	42
5126	Head Canyon	3,577	1,284	4,861	466	0	466	466S m/	143	7	-323	-323	200	21
5127	Gallegos Canyon	1,780	73	1,853	192	0	192	123C 7H d/	157	2	-35	+27	192	7

Allot. No.	Allot. Name	Acres - Public Land	Acres - Other Ownership	Total Allotmt. Acreage	Present Use (AUMs) Total AUMs (Pvt., State, Fed'l)	Wildlife	Preference (Fed'l)	Average Licensed Use (6-yr. avg.) a/	Proposed Forage Allocations (Fed'l AUMS) Livestock	Wildlife	Changes from Preference (AUMs)	Changes from Avg. Licensed Use (AUMs)	Projected Goal by Year 2000 (AUMs) Livestock	Wildlife
Intensive Management														
5128	Horn Canyon	497	534	1,031	84	0	84	28C	33	1	-51	+5	75	3
5129	Stewart Canyon	7,126	3,768	10,894	420	0	360	246C	243	24	-117	-3	360	72
5130	Santo Nino	1,065	703	1,768	277	0	144	83C	79	36	-65	-4	90	109
5131	Bonito	2,860	1,820	4,680	288	0	168	17C f/	137	2	-31	+120	168	6
5132	Rivershore	77	0	77	48	0	48	36C	41	2	-7	+5	48	7
5133	Jewett Valley	0	46	46	18	0	18	12C	1	2	-17	-11	5	7
5134	San Juan River	40	100	140	72	0	18	17C	4	2	-14	-13	8	7
5135	La Jara Mesa	3.866	5,232	9,098	1,211	0	764	195C 154S	290	22	-474	-59	350	67
5136	Hargis Arroyo	229	352	581	153	0	28	22C	16	1	-12	-6	20	3
5137	Chico	2,695	610	3,305	252	0	144	77C	181	7	+37	+104	188	21

Allot. No.	Allot. Name	Acres - Public Land	Acres - Other Ownership	Total Allotmt. Acreage	Present Use (AUMs) Total AUMs (Pvt., State, Fed'l)	Wildlife	Preference (Fed'l)	Average Licensed Use a/ (6-yr. avg.)	Proposed Forage Allocations (Fed'l AUMS) Livestock	Wildlife	Changes from Preference (AUMs)	Changes from Avg. Licensed Use (AUMs)	Projected Goal by Year 2000 (AUMs) Livestock	Wildlife
Intensive Management														
5138	North Glade	2,232	1,167	3,399	445	0	322	41S c/	233	7	-89	+192	322	21
5139	Coach	2,547	3,255	5,802	507	0	380	53S c/	489	20	+109	+436	500	70
5140	Flora Vista	12,669	2,720	15,389	2,292	0	1,632	588S c/	860	19	-772	+272	1,000	56
Subtotal - Non AMPs		686,500	266,978	953,478	115,958	608	83,647	k/	53,391	2,045			69,670	6,249
Total		926,909	351,712	1,278,621	147,082	5,799	108,371	66,146 l/	69,335	5,799			90,311	16,630

Source: BLM Planning Documents, 1979.

Notes:
a/ C=cattle, H=horses, S=sheep, G=goats
b/ This allotment has proposed forage allocations of 276 AUMs for wild horses.
c/ 1 year figured in actual use
d/ 5 years figured in actual use
e/ 4 years figured in actual use
f/ 3 years figured in actual use
g/ 2 years figured in actual use
h/ Allot. No. 42 - Unallotted for livestock use
i/ Allot. No. 66 - Presently unallotted
j/ Range-site descriptions not available for mapping units in these allotments. Potential production cannot be computed.
k/ Subtotals for non-AMP allotments: 36,549 cattle; 1,256 horses; 10,819 sheep.
l/ Subtotals for all allotments: 53,929 cattle; 1,398 horses; 10,819 sheep.
m/ Qualifications

APPENDIX H-2

PRESENT LIVESTOCK GRAZING SITUATION

Allotment No.	Allotment Name	Total Operators In Allotment	No. Operators With 1 Allot. Only	Operators With Other Allotments 1/	Active Licensed Use - 6 Yr. Avg. (PL - AUMs)	Additional AUMs Available On Public Land	Average Percent Of Total Forage On Public Lands	Period of Use
Existing AMPs								
5005	Shumway	1	-	1^{A}	742	278	81	12/1-4/30
5026	Lonetree Mtn.	1	1	-	777	360	65	11/15-5/31
5047	Animas Comm.	2	2	-	247	463	82	5/1-10/31
5052	Tank Mtn. Comm.	2	-	$2^{F,O}$	1,227	405	84	4/1-10/30
5053	Mt. Nebo	1	-	1^{O}	164	156	100	4/1-5/31 10/16-12/15
5055	Pump Mesa	1	1	-	1,575	1,180	89	11/1-5/31
5056	Middle Mesa	2	1	1^{P}	1,558	7	81	3/1-2/28
5058	Rosa Comm.	5	5	-	1,150	231	92	5/1-11/30
5059	Frances Mesa	1	1	-	1,165	539	58	11/1-5/31
5095	Jesus Canyon	1	-	1^{Z}	441	87	82	11/1-6/15
5107	Delgadito Mesa	1	-	1^{b}	1,540	261	65	11/15-5/15
5114	Ice Canyon	1	1	-	2,233	1,751	86	11/1-5/31
5115	Superior Mesa	1	-	1^{b}	2,279	868	87	11/15-5/15
5116	Gonzales Mesa	1	1	-	954	141	73	3/1-2/28
5118	Crow Mesa	1	-	1^{d}	1,470	475	83	3/1-2/28

APPENDIX H-2 (Cont'd)

Allotment No.	Name	Total Operators In Allotment	No. Operators With 1 Allot. Only	Operators With Other Allotments 1/	Active Licensed Use - 6 Yr. Avg. (PL - AUMs)	Additional AUMs Available On Public Land	Average Percent Of Total Forage On Public Lands	Period of Use
Intensive Management								
5001	North Hogback	1	1	-	214	156	79	11/1-2/28
5002	Waterflow Comm.	2	2	-	283	75	94	5/1-10/31
5003	Coal Flats	1	-	1[A]	77	79	65	12/1-4/30
5004	Steven's Arroyo	1	1	-	214	74	67	5/1-11/30
5006	Cline Arroyo	1	1	-	80	192	74	11/1-4/30
5007	Twin Mounds	1	1	-	273	492	100	4/1-12/31
5008	Norton Flats	1	1	-	102	152	37	12/20-5/20
5009	Cottonwood Arroyo Comm.	2	2	-	505	323	55	3/1-2/28
5010	Pinon Mesa	1	1	-	128	291	64	10/1-5/31
5011	Coal Bank Canyon	1	1	-	146	216	40	11/1-6/15
5012	Jones Canyon	1	1	-	221	131	77	12/1-5/15
5013	Thomas Canyon	1	1	-	81	125	66	12/1-4/30
5014	State Line	1	-	1[B]	76	90	100	12/1-4/15
5015	Coyote Hills	1	1	-	69	19	100	5/1-7/15
5016	Farmington Glade	1	1	-	980	32	34	11/1-6/15
5017	McDermott Wash	1	1	-	139	89	95	10/1-6/15

APPENDIX H-2 (Cont'd)

Allotment No.	Allotment Name	Total Operators In Allotment	No. Operators With 1 Allot. Only	Operators With Other Allotments 1/	Active Licensed Use - 6 Yr. Avg. (PL - AUMs)	Additional AUMs Available On Public Land	Average Percent Of Total Forage On Public Lands	Period of Use
Intensive Management								
5018	La Plata Comm.	2	2	-	185	99	91	5/1-10/31
5019	Adobe Downs	1	1	-	47	121	61	11/1-6/30
5020	Hartley Springs	1	1	-	418	18	42	11/25-5/23
5021	Ruins	1	-	1[C]	777	51	66	11/20-5/20
5022	Barton Arroyo	1	1	-	36	72	82	4/1-9/30
5023	Kochis	1	1	-	59	-23	100	7/1-12/31
5024	Animas River	1	1	-	2	25	75	11/1-4/30
5025	Riverside Comm.	2	2	-	49	71	63	3/1-2/28
5027	East Farm. Comm.	4	3	1[D]	365	151	94	5/1-10/31
5028	Crouch Mesa	1	1	-	308	172	47	3/1-2/28
5029	Crawford Mesa Comm.	2	1	1[E]	481	268	92	4/1-11/30
5030	Aztec Comm.	2	1	1[F]	64	86	100	5/1-10/31
5031	Bloomfield Comm.	14	13	1[E]	448	566	100	5/1-10/31
5032	South Aztec	1	-	1[G]	384	341	78	11/1-4/30
5033	Potter Canyon	1	-	1[C]	370	39	89	11/20-5/20
5034	South Hogback	1	1	-	69	30	74	3/1-2/28
5035	Gonzales Comm.	8	6	2[H,I]	208	115	78	3/1-2/28

Allotment No.	Allotment Name	Total Operators In Allotment	No. Operators With 1 Allot. Only	Operators With Other Allotments 1/	Active Licensed Use - 6 Yr. Avg. (PL - AUMs)	Additional AUMs Available On Public Land	Average Percent Of Total Forage On Public Lands	Period of Use
Intensive Management								
5036	North Place	1	-	1[J]	190	218	72	11/1-6/15
5037	Knickerbocker Peak Comm.	1	-	1[B]	556	938	75	12/1-4/30
5038	Blanquito	1	-	1[a K,H]	43	53	100	11/25-5/10
5039	North Blanco Comm.	19	13	6[I,L M,N]	473	488	98	5/1-11/30
5040	Five Mile Comm.	2	-	2[H,I]	118	100	71	5/1-11/30
5041	Pump Canyon Comm.	1	-	1[M]	308	361	86	3/1-2/28
5042	Scattered Tracts (unallotted)							
5043	Crow Canyon	1	-	1[C]	321	44	78	11/20-5/20
5044	Archuleta Comm.	2	1	1[K]	55	5	83	4/1-10/31
5045	Hart Canyon	1	-	1[B]	88	87	100	11/1-4/30
5046	Hart Mtn.	1	1	-	5	187	60	3/1-2/28
5048	Little Pump	1	1	-	91	65	76	4/15-11/15
5049	Alamo Canyon	1	1	-	165	75	74	12/1-5/31
5050	Sandstone Canyon	1	1	-	385	263	86	11/1-5/31
5051	Cutter Dam	1	1	-	122	124	95	11/1-5/31

APPENDIX H-2 (Cont'd)

Allotment No.	Allotment Name	Total Operators In Allotment	No. Operators With 1 Allot. Only	Operators With Other Allotments 1/	Active Licensed Use - 6 Yr. Avg. (PL - AUMs)	Additional AUMs Available On Public Land	Average Percent Of Total Forage On Public Lands	Period of Use
Intensive Management								
5054	Rattlesnake Canyon	1	1	-	167	160	64	5/1-10/31
5057	Mentzel Mesa	1	1	-	60	0	100	3/1-2/28
5060	Manuel Canyon	1	1	-	586	218	61	11/1-5/31
5061	Manuel Mesa	1	-	1[Q]	186	30	78	11/1-5/31
5062	Frances Canyon	1	1	-	636	52	57	3/1-2/28
5063	La Baca Canyon	1	-	1[R]	53	191	70	6/1-10/31
5064	Sims Mesa	1	-	1[S]	1,022	-71	72	11/1-6/15
5065	Lopez Canyon	1	1	-	96	108	81	11/1-5/31
5066	La Jara Canyon (unallotted)	0	0	0	0	0	0	11/1-2/28
5067	Cemetery Ridge	1	-	1[T]	37	35	75	3/1-2/28
5068	Trujillo Spring	1	-	1[T]	201	195	41	3/1-2/28
5069	East Armenta	1	-	1[U]	111	825	100	11/15-5/15
5070	Jacquez Canyon Comm.	2	2	-	2,239	1,589	81	3/1-2/28
5071	Harris Mesa	1	-	1[J]	674	286	80	10/15-6/1
5072	Angel Peak	1	-	1[V]	2,070	4,350	89	3/1-2/28
5073	Jacquez Comm.	1	-	1[V]	1,146	0	62	3/1-2/28

APPENDIX H-2 (Cont'd)

Allotment No.	Allotment Name	Total Operators In Allotment	No. Operators With 1 Allot. Only	Operators With Other Allotments 1/	Active Licensed Use - 6 Yr. Avg. (PL - AUMs)	Additional AUMs Available On Public Land	Average Percent Of Total Forage On Public Lands	Period of Use
Intensive Management								
5074	44 Allot.	1	-	1[U]	424	740	66	11/15-5/15
5075	Huerfanito Peak	1	-	1[I]	99	165	51	11/1-5/31
5076	Dufers Point	1	1	-	1,709	1,597	88	12/1-5/31
5077	Huerfano	1	-	1[W]	383	1,422	73	3/1-2/28
5078	South Blanco Comm.	1	-	1[V]	874	-7	86	3/1-2/28
5079	Petrified Forest	1	1	-	0	348	66	3/1-2/28
5080	Sweetwater	1	-	1[V]	320	364	62	3/1-2/28
5081	Blanco Trading Post	1	-	1[F]	948	-289	80	11/1-3/31
5082	Mission	1	1	-	162	138	50	3/1-2/28
5083	Largo Comm.	37	37	-	3,474	468	81	3/1-2/28
5084	Sheep Well	1	1	-	116	532	78	3/1-2/28
5085	Nageezi	1	-	1[W]	82	14	100	3/1-2/28
5086	Turley	1	-	1[L]	17	55	55	5/1-10/31
5087	Martinez Mesa	1	1	-	232	159	94	5/1-10/31
5088	Baltzar Peak Mesa	1	1	-	259	287	90	5/1-11/30
5089	Navajo Dam	1	1	-	287	21	50	11/1-5/31
5090	Cool Water Canyon	1	-	1[X]	75	57	55	3/1-2/28

APPENDIX H-2 (Cont'd)

Allotment No.	Allotment Name	Total Operators In Allotment	No. Operators With 1 Allot. Only	Operators With Other Allotments 1/	Active Licensed Use - 6 Yr. Avg. (PL - AUMs)	Additional AUMs Available On Public Land	Average Percent Of Total Forage On Public Lands	Period of Use
Intensive Management								
5091	Manzanares Mesa	1	1	-	284	244	100	11/1-5/15
5092	Navajo City	1	-	1[Y]	273	388	68	11/1-6/15
5093	Jaramillo Comm.	2	1	1[Y]	1,046	106	42	3/1-2/28
5094	Ridge Road	1	-	1[Z]	453	206	93	11/1-5/31
5096	Jesus Mesa	1	1	-	199	137	76	11/1-5/31
5097	Gobernador Canyon	1	1	-	442	362	62	11/1-5/15
5098	Devils Spring	1	-	1[X]	217	35	84	3/1-2/28
5099	4-Mile Canyon	1	-	1[T]	49	47	40	3/1-2/28
5100	Gobernador Camp	1	-	1[Q]	273	-43	55	11/1-5/15
5101	No allotment assigned							
5102	4-Mile Mesa	1	1	-	179	-11	54	11/1-6/30
5103	Headwater Canyon	1	1	-	27	8	73	5/1-10/31
5104	Laguna Seca Draw	1	1	-	214	78	98	1/1-4/30
5105	Snyder Peak	1	-	1[a]	117	313	78	11/1-5/15
5106	Canyon Largo	1	-	1[N]	3,243	1,125	85	10/25-6/15
5108	Carrizo Canyon	1	1	-	312	84	83	11/25-6/15
5109	Munoz Canyon	1	-	1[R]	397	319	69	11/1-5/31

Allotment No.	Allotment Name	Total Operators In Allotment	No. Operators With 1 Allot. Only	Operators With Other Allotments 1/	Active Licensed Use - 6 Yr. Avg. (PL - AUMs)	Additional AUMs Available On Public Land	Average Percent Of Total Forage On Public Lands	Period of Use
Intensive Management								
5110	Otis	1	-	1[W]	13	42	87	3/1-2/28
5111	South Equus	1	-	1[c]	97	275	82	3/1-2/28
5112	Pioche Canyon	1	-	1[d]	295	329	84	3/1-2/28
5113	Ensenada Mesa	1	1	-	1,662	2,723	87	3/1-2/28
5117	Carter Mesa	1	1	-	130	206	53	11/1-5/31
5119	Rancho Largo	1	-	1[d]	5,246	3,370	59	3/1-2/28
5120	La Parita Canyon	1	1	-	151	5	59	3/1-2/28
5121	North Equus	1	-	1[c]	142	-10	44	3/1-2/28
5122	Eagle Rock	1	1	-	206	46	38	3/1-2/28
5123	Escrito Spring	1	1	-	23	25	57	3/1-2/28
5124	Gallo Canyon	1	1	-	74	226	81	9/51-10/25
5125	Kutz Canyon	1	-	1[V]	1,172	0	100	3/1-2/28
5126	Head Canyon	1	-	1[V]	466	0	100	3/1-2/28
5127	Gallegos Canyon	1	-	1[D]	130	62	100	3/1-2/28
5128	Horn Canyon	1	-	1[V]	28	56	100	3/1-2/28
5129	Stewart Canyon	1	1	-	246	114	86	3/1-2/28

APPENDIX H-2 (Concluded)

Allotment No.	Allotment Name	Total Operators In Allotment	No. Operators With 1 Allot. Only	Operators With Other Allotments 1/	Active Licensed Use - 6 Yr. Avg. (PL - AUMs)	Additional AUMs Available On Public Land	Average Percent Of Total Forage On Public Lands	Period of Use
Intensive Management								
5130	Santo Nino	1	-	1[Y]	83	61	52	3/1-2/28
5131	Benito	1	-	1[P]	17	151	58	3/1-2/28
5132	Rivershore	1	1	-	36	12	100	3/1-11/30
5133	Jewett Valley	1	1	-	12	6	100	5/1-10/31
5134	San Juan River	1	1	-	17	1	25	3/1- 2/28
5135	La Jara Mesa	1	-	1[S]	349	415	63	11/1- 6/15
5136	Hargis Arroyo	1	1	-	22	6	18	5/1-11/30
5137	Chico	1	-	1[I]	77	67	57	11/1-5/31
5138	North Glade	1	-	1[G]	41	281	72	11/1-4/30
5139	Coach	1	-	1[G]	53	327	75	11/1-4/30
5140	Flora Vista	1	1	-	588	1,044	71	10/15-5/15

Source: BLM Planning Documents, 1979.

Note: 1/Letters designate operators on more than one allotment as follows:

Operator	Allotments Involved	Operator	Allotments Involved	Operator	Allotments Involved
A	3, 5	K	39, 44	U	69, 74
B	14, 37, 45	L	39, 86	V	72, 73, 78, 80, 125, 126, 128
C	21, 33, 43	M	39, 41	W	77, 85, 110
D	27, 127	N	39, 106	X	90, 98
E	29, 31	O	52, 53	Y	92, 93, 130
F	30, 52, 81	P	56, 131	Z	94, 95
G	32, 138, 139	Q	61, 100	a	38, 105
H	35, 39, 40	R	63, 109	b	107, 115
I	35, 39, 40, 75, 137	S	64, 135	c	111, 121
J	36, 71	T	67, 68, 99	d	112, 118, 119

(Total: 30 operators)

APPENDIX H-3

PROPOSED RANGE DEVELOPMENTS

Allotment Number	Development	Quantity and Unit	Intended For	Average Acres Disturbed Per Unit Short Term	Per Unit Long Term	Total Short Term	Total Long Term
5002	Dirt tanks	3	Livestock	3.80	1.80	11.40	5.40
5004	Dirt tanks	1	"	3.80	1.80	3.80	1.80
5005	Inverted umbrella	1	Wildlife	0.10	0.01	0.10	0.01
5006	Dirt tanks	2	Livestock	3.80	1.80	7.60	3.60
	Pipeline	1/10 mi.	"	1.50	0.10	0.15	0.01
	Drinking tub	1	"	0.10	0.08	0.10	0.08
5007	Well with windmill	1 each	"	0.50	0.10	0.50	0.10
	Pipeline	1/10 mi.	"	1.50	0.10	0.15	0.01
	Drinking tub	1	"	0.10	0.08	0.10	0.08
	Inverted umbrella	1	Wildlife	0.10	0.01	0.10	0.01
5008	Dirt tanks	1	Livestock	3.80	1.80	3.80	1.80
5009	Cattleguards	2	"	0.06	0.06	0.12	0.12
5010	Dirt tanks	2	"	3.80	1.80	7.60	3.60
5011	Inverted umbrella	1	Wildlife	0.10	0.01	0.10	0.01
5016	Pipeline	1/2 mi.	Livestock	1.50	0.10	0.75	0.05
	Drinking tub	1	"	0.10	0.08	0.10	0.08
5017	Pipeline	3/4 mi.	"	1.50	0.10	1.12	0.08
	Drinking tub	1	"	0.10	0.08	0.10	0.08
5018	Well with pump	1 each	"	0.50	0.10	0.50	0.10
	20,000 gal. storage tank	1	"	0.30	0.05	0.30	0.05
	Pipeline	1/10 mi.	"	1.50	0.10	0.15	0.01
	Drinking tub	1	"	0.10	0.08	0.10	0.08
5026	Inverted umbrella	1	Wildlife	0.10	0.01	0.10	0.01
5028	Well with pump	1 each	Livestock	0.50	0.10	0.50	0.10
	20,000 gal. storage tank	1	"	0.30	0.05	0.30	0.05
	Pipeline	1/10 mi.	"	1.50	0.10	0.15	0.01
	Drinking tub	1	"	0.10	0.08	0.10	0.08
5029	Pipeline	1/3 mi.	"	1.50	0.10	0.50	0.03
	Drinking tub	1	"	0.10	0.08	0.10	0.08
5030	Well with pump	1 each	"	0.50	0.10	0.50	0.10
	20,000 gal. storage tank	1	"	0.30	0.05	0.30	0.05
	Pipeline	1/10 mi.	"	1.50	0.10	0.15	0.01
	Drinking tub	1	"	0.10	0.08	0.10	0.08
5031	Pipeline	1 1/2 mi.	"	1.50	0.10	2.25	0.15
	Drinking tubs	2	"	0.10	0.08	0.20	0.16
5032	Pipeline	1/10 mi.	"	1.50	0.10	0.15	0.01
	Drinking tub	1	"	0.10	0.08	0.10	0.08
	Inverted umbrella	1	Wildlife	0.10	0.01	0.10	0.01

Allotment Number	Development	Quantity and Unit	Intended For	Average Acres Disturbed Per Unit Short Term	Per Unit Long Term	Total Short Term	Total Long Term
5039	Well with pump	1 each	Livestock	0.50	0.10	0.50	0.10
	20,000 gal. storage tank	1	"	0.30	0.05	0.30	0.05
	Pipeline	1/10 mi.	"	1.50	0.10	0.15	0.01
	Drinking tub	1	"	0.10	0.08	0.10	0.08
	Spring	1	"	0.10	0.05	0.10	0.05
	Drinking tub (to be partly on Allot. 5041)	1/2	"	0.10	0.08	0.05	0.04
5040	Spring	1	Wildlife	0.10	0.05	0.10	0.05
5041	Slick rock catchment	1	Livestock	1.00	0.50	1.00	0.50
	20,000 gal. storage tank	1	"	0.30	0.05	0.30	0.05
	Drinking tub	1	"	0.10	0.08	0.10	0.08
	Drinking tub (to be partly on Allot. 5039)	1/2	"	0.10	0.08	0.05	0.04
5042	Spring	1	Wildlife	0.10	0.05	0.10	0.05
5050	Slick rock catchment	1	"	1.00	0.50	1.00	0.50
5052	Slick rock catchment	1	"	1.00	0.50	1.00	0.50
	Inverted umbrella	1	"	0.10	0.01	0.10	0.01
5055	Fence	2 mi.	Livestock	1.00	0.20	2.00	0.40
5056	Well with windmill	1 each	"	0.50	0.10	0.50	0.10
	20,000 gal. storage tank	1	"	0.30	0.05	0.30	0.05
	Pipeline	3 mi.	"	1.50	0.10	4.50	0.30
	Drinking tubs	2	"	0.10	0.08	0.20	0.16
5058	Well with pump	1 each	"	0.50	0.10	0.50	0.10
5059	Spring	1	Wildlife	0.10	0.05	0.10	0.05
5070	Well with windmill	1 each	Livestock	0.50	0.10	0.50	0.10
	Pipeline	1/10 mi.	"	1.50	0.10	0.15	0.01
	Springs	2	"	0.10	0.05	0.20	0.10
5071	Sump	1	"	3.80	1.80	3.80	1.80
5072	Inverted umbrellas	2	Wildlife	0.10	0.01	0.20	0.02
5073	Well with windmill	1 each	Livestock	0.50	0.10	0.50	0.10
	Pipeline	1/10 mi.	"	1.50	0.10	0.15	0.01
	Spring	1	"	0.10	0.05	0.10	0.05
	Drinking tubs	2	"	0.10	0.08	0.20	0.16
5075	Well with windmill	1 each	"	0.50	0.10	0.50	0.10
	Pipeline	1 mi.	"	1.50	0.10	1.50	0.10
	Drinking tubs	2	"	0.10	0.08	0.20	0.16
5076	Well with windmill	1 each	"	0.50	0.10	0.50	0.10
	Pipeline	1/10 mi.	"	1.50	0.10	0.15	0.01
	Drinking tub	1	"	0.10	0.08	0.10	0.08
	Inverted umbrella	1	Wildlife	0.10	0.01	0.10	0.01
	Springs	2	"	0.10	0.05	0.20	0.10
5077	Well with windmill	1 each	Livestock	0.50	0.10	0.50	0.10
	Pipeline	3 mi.	"	1.50	0.10	4.50	0.30
	Drinking tubs	2	"	0.10	0.08	0.20	0.16

APPENDIX H-3 (Concluded)

Allotment Number	Development	Quantity and Unit	Intended For	Average Acres Disturbed Per Unit Short Term	Per Unit Long Term	Total Short Term	Total Long Term
5083	Wells with windmills	2 each	Livestock	0.50	0.10	1.00	0.20
	Pipeline	1/2 mi.	"	1.50	0.10	0.75	0.05
	Drinking tubs	2	"	0.10	0.08	0.20	0.16
	Fence	5 mi.	"	1.00	0.20	5.00	1.00
	Cattleguards	5	"	0.06	0.06	0.30	0.30
5086	Spring	1	"	0.10	0.05	0.10	0.05
	Drinking tub	1	"	0.10	0.08	0.10	0.08
5087	Slick rock catchment	1	Wildlife	1.00	0.50	1.00	0.50
	Springs	2	"	0.10	0.05	0.20	0.10
5088	Spring	1	Livestock	0.10	0.05	0.10	0.05
	Drinking tub	1	"	0.10	0.08	0.10	0.08
	Spring	1	Wildlife	0.10	0.05	0.10	0.05
5091	Spring	1	"	0.10	0.05	0.10	0.05
5095	Inverted umbrella	1	"	0.10	0.01	0.10	0.01
	Springs	2	"	0.10	0.05	0.20	0.10
5096	Inverted Umbrella	1	"	0.10	0.01	0.10	0.01
5100	Well with windmill	1 each	Livestock	0.50	0.10	0.50	0.10
	20,000 gal. storage tank	1	"	0.30	0.05	0.30	0.05
	Pipeline	1 mi.	"	1.50	0.10	1.50	0.10
	Drinking tubs	2	"	0.10	0.08	0.20	0.16
5105	Inverted umbrellas	2	Wildlife	0.10	0.01	0.20	0.02
5106	Inverted umbrella	1	"	0.10	0.01	0.10	0.01
	Slick rock catchment	1	"	1.00	0.50	1.00	0.50
	Spring	1	"	0.10	0.05	0.10	0.05
5107	Pipeline	1 1/4 mi.	Livestock	1.50	0.10	1.88	0.12
	Drinking tub	1	"	0.10	0.08	0.10	0.08
5108	Inverted umbrella	1	Wildlife	0.10	0.01	0.10	0.01
5109	Inverted umbrella	1	"	0.10	0.01	0.10	0.01
	Slick rock catchment	1	"	1.00	0.50	1.00	0.50
5112	Inverted umbrella	1	"	0.10	0.01	0.10	0.01
5113	Inverted umrella	1	"	0.10	0.01	0.10	0.01
	Springs	2	"	0.10	0.05	0.20	0.10
5114	Inverted umbrella	1	"	0.10	0.01	0.10	0.01
5115	Pipeline	4 mi.	Livestock	1.50	0.10	6.00	0.40
	Drinking tubs	3	"	0.10	0.08	0.30	0.24
	Inverted umbrella	1	Wildlife	0.10	0.01	0.10	0.01
	Springs	2	"	0.10	0.05	0.20	0.10
5118	Spring	1	"	0.10	0.05	0.10	0.05
5119	Springs	3	"	0.10	0.05	0.30	0.15
Totals						95.67	30.59

Source: BLM Planning Documents, 1979.

APPENDIX H-4

IMPLEMENTATION SCHEDULE FOR ALLOTMENT MANAGEMENT SYSTEMS
(By allotment numbers)

Priority 1 1980-1982	Priority 2 1982-1987			Priorities 3 and 4 1987-1989	
				3	4
5003	5001	5066	5097		
5007	5002	5067	5100		
5008	5004	5068	5102	5017	5005
5010	5006	5069	5103	5019	5022
5011	5009	5070	5106	5032	5023
5012	5018	5071	5108	5037	5024
5013	5021	5073	5109	5045	5025
5014	5027	5075	5110	5081	5030
5015	5034	5076	5111	5138	5026
5016	5038	5077	5112	5139	5042
5020	5039	5078	5113	5140	5052
5028	5040	5079	5117		5053
5029	5041	5080	5119		5055
5031	5043	5082	5120		5056
5033	5044	5083	5121		5058
5035	5046	5084	5122		5059
5036	5048	5086	5124		5085
5047	5049	5087	5125		5095
5050	5051	5088	5126		5107
5054	5060	5089	5127		5115
5057	5061	5090	5129		5114
5072	5062	5091	5132		5116
5074	5063	5092	5133		5123
5096	5064	5093	5135		5128
5097	5065	5094	5137		5134
5098					5136
5099					
5104					
5105					
5118					
5130					
5131					

Source: BLM Files, 1977-79.

APPENDIX H-5

PROPOSED AND PROJECTED FORAGE ALLOCATION BY ALLOTMENT BY ALTERNATIVE

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Existing AMPs									
5005	ELG[a/]	0	14	950	964	0	43	1,020	1,063
Shumway	EORV	695	14	255	964	695	43	325	1,063
Arroyo	NA	742	0		742	742	0		742
	PA	950	14		964	1,020	43		1,063
	MLFP	950	14		964	1,020	43		1,063
5026	ELG	0	74	384	458	0	224	600	824
Lonetree	EORV	192	74	192	458	192	224	408	824
Mountain	NA	777	0		777	777	0		777
	PA	384	74		458	600	224		824
	MLFP	384	74		458	600	224		824
5047	ELG	0	27	492	519	0	72	800	872
Animas	EORV	242	27	250	519	242	72	558	872
Community	NA	247	0		247	247	0		247
	PA	492	27		519	800	72		872
	MLFP	492	27		519	1,176	72		1,248
5052	ELG	0	46	1,358	1,404	0	139	1,632	1,771
Tank	EORV	711	46	647	1,404	711	139	921	1,771
Mountain	NA	1,227	0		1,227	1,227	0		1,227
Community	PA	1,358	46		1,404	1,632	139		1,771
	MLFP	1,358	46		1,404	1,992	139		2,131
5053	ELG	0	25	109	134	0	76	160	236
Mount Nebo	EORV	62	25	47	134	62	76	93	231
	NA	164	0		164	164	0		164
	PA	109	25		134	160	76		236
	MLFP	109	25		134	160	76		236
5055	ELG	0	436	1,318	1,754	0	1,319	2,000	3,319
Pump Mesa	EORV	916	436	402	1,754	916	1,319	1,084	3,319
	NA	1,575	0		1,575	1,575	0		1,575
	PA	1,318	436		1,754	2,000	1,319		3,319
	MLFP	1,318	436		1,754	4,843	1,319		6,162
5056	ELG	0	765	1,565	2,330	0	2,312	1,565	3,877
Middle Mesa	EORV	1,183	765	382	2,330	1,183	2,312	382	3,877
	NA	1,558	1,920		3,478	1,558	1,920		3,478
	PA	1,565	765		2,330	1,565	2,312		3,877
	MLFP	1,565	765		2,330	2,422	2,312		4,734
5058	ELG	0	1,312[b/]	1,381	2,693[b/]	0	2,333[b/]	1,500	3,833[b/]
Rosa	EORV	618	1,312[b/]	763	2,693[b/]	618	2,333[b/]	882	3,833[b/]
Community	NA	1,150	2,280		3,340	1,150	2,280		3,430
	PA	1,381	1,312[c/]		2,693[c/]	1,500	2,333[c/]		3,833[c/]
	MLFP	1,381	1,312[c/]		2,693[c/]	1,500	2,333[c/]		3,833[c/]

APPENDIX H-5 (Cont'd)

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Existing AMPs									
5059	ELG	0	300	812	1,112	0	906	1,100	2,006
Frances	EORV	480	300	332	1,112	480	906	620	2,006
Mesa	NA	1,165	300		1,465	1,165	300		1,465
	PA	812	300		1,112	1,100	906		2,006
	MLFP	812	300		1,112	1,307	906		2,213
5095	ELG	0	43	382	425	0	129	528	657
Jesus	EORV	272	43	110	425	272	129	256	657
Canyon	NA	441	0		441	441	0		441
	PA	382	43		425	528	129		657
	MLFP	382	43		425	861	129		990
5107	ELG	0	64	1,516	1,580	0	192	1,801	1,993
Delgadito	EORV	1,150	64	365	1,579	1,150	192	650	1,992
Mesa	NA	1,540	0		1,540	1,540	0		1,540
	PA	1,516	64		1,580	1,801	192		1,993
	MLFP	1,516	64		1,580	2,049	192		2,241
5114	ELG	0	304	2,109	2,413	0	920	3,000	3,920
Ice	EORV	1,386	304	723	2,413	1,386	920	1,614	3,920
Canyon	NA	2,233	274		2,507	2,233	274		2,507
	PA	2,109	304		2,413	3,000	920		3,920
	MLFP	2,109	304		2,413	3,000	920		3,920
5115	ELG	0	458	2,072	2,530	0	1,499	3,147	4,646
Superior	EORV	1,208	458	1,277	2,530	1,208	1,499	1,939	4,646
Mesa	NA	2,279	0		2,279	2,279	0		2,279
	PA	2,072	458		2,530	3,147	1,499		4,646
	MLFP	2,072	458		2,530	4,191	1,499		5,690
5116	ELG	0	102	597	699	0	311	688	999
Gonzales	EORV	391	102	206	699	391	311	297	999
Mesa	NA	954	417		1,371	954	417		1,371
	PA	597	102		699	688	311		999
	MLFP	597	102		699	802	311		1,113
5118	ELG	0	60	899	959	0	182	1,100	1,282
Crow	EORV	450	60	449	959	450	182	650	1,282
Mesa	NA	1,470	0		1,470	1,470	0		1,470
	PA	899	60		959	1,100	182		1,282
	MLFP	899	60		959	1,303	182		1,485

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5001	ELG	0	0	275	275	0	0	370	370
North	EORV	138	0	137	275	138	0	232	370
Hogback	NA	214	0		214	214	0		214
	PA	275	0		275	370	0		370
	MLFP	275	0		275	370	0		370
5002	ELG	0	4	375	379	0	28	488	516
Waterflow	EORV	200	4	175	379	200	28	288	516
Community	NA	283	0		283	283	0		283
	PA	375	4		379	488	28		516
	MLFP	375	4		379	488	28		516
5003	ELG	0	7	201	208	0	21	222	243
Coal	EORV	97	7	104	208	97	21	125	243
Flats	NA	77	0		77	77	0		77
	PA	201	7		208	222	21		243
	MLFP	201	7		208	222	21		243
5004	ELG	0	5	135	140	0	15	288	303
Stevens	EORV	137	3		140	137	15	151	303
Arroyo	NA	214	0		214	214	0		214
	PA	137	5		140	288	15		303
	MLFP	137	5		140	288	15		303
5006	ELG	0	11	303	314	0	33	325	358
Cline	EORV	211	11	92	314	211	33	114	358
Arroyo	NA	80	0		80	80	0		80
	PA	303	11		314	325	33		358
	MLFP	303	11		314	325	33		358
5007	ELG	0	13	276	289	0	39	500	539
Twin	EORV	133	13	143	289	133	39	367	539
Mounds	NA	273	0		273	273	0		273
	PA	276	13		289	500	39		539
	MLFP	276	13		289	500	39		539
5008	ELG	0	14	316	330	0	43	407	450
Norton	EORV	179	14	137	330	179	43	228	450
Flats	NA	102	0		102	102	0		102
	PA	316	14		330	407	43		450
	MLFP	316	14		330	407	43		450
5009	ELG	0	21	411	432	0	59	500	559
Cottonwood	EORV	252	21	159	432	252	59	248	559
Arroyo	NA	505	0		505	505	0		505
Community	PA	411	21		432	500	59		559
	MLFP	411	21		432	500	59		559

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5010	ELG	0	10	338	348	0	30	419	449
Pinon	EORV	169	10	169	348	169	30	250	449
Mesa	NA	128	0		128	128	0		128
	PA	338	10		348	419	30		449
	MLFP	338	10		348	419	30		449
5011	ELG	0	93	90	183	0	280	180	460
Coal Bank	EORV	2	93	88	183	2	280	178	460
Canyon	NA	146	0		146	146	0		146
	PA	90	93		183	180	280		460
	MLFP	90	93		183	292	280		572
5012	ELG	0	20	75	95	0	45	125	170
Jones	EORV	35	20	40	95	35	45	90	170
Canyon	NA	221	0		221	221	0		221
	PA	75	20		95	125	45		170
	MLFP	75	20		95	125	45		170
5013	ELG	0	4	0	4	0	8	0	8
Thomas	EORV	0	4	0	4	0	8	0	8
Canyon	NA	81	0		81	81	0		81
	PA	0	4		4	0	8		8
	MLFP	0	4		4	0	8		8
5014	ELG	0	11	60	71	0	23	100	123
State	EORV	28	11	32	71	28	23	72	123
Line	NA	76	0		76	76	0		76
	PA	60	11		71	100	23		123
	MLFP	60	11		71	118	23		141
5015	ELG	0	21	223	244	0	42	240	282
Coyote	EORV	105	21	118	244	105	42	135	282
Hills	NA	69	0		69	69	0		69
	PA	223	21		244	240	42		282
	MLFP	223	21		244	271	42		313
5016	ELG	0	38	647	685	0	115	1,012	1,127
Farmington	EORV	306	38	341	685	306	115	706	1,127
Glade	NA	980	0		980	980	0		980
	PA	647	38		685	1,012	115		1,127
	MLFP	647	38		685	1,226	115		1,341
5017	ELG	0	7	173	180	0	21	228	249
McDermott	EORV	88	7	85	180	88	21	140	249
Wash	NA	139	0		139	139	0		139
	PA	173	7		180	228	21		249
	MLFP	173	7		180	228	21		249

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5018	ELG	0	7	224	231	0	21	284	305
La Plata	EORV	109	7	115	231	109	21	175	305
Community	NA	185	0		185	185	0		185
	PA	224	7		231	284	21		305
	MLFP	224	7		231	307	21		328
5019	ELG	0	1	207	208	0	3	220	223
Adobe	EORV	103	1	104	208	103	3	117	223
Downs	NA	47	0		47	47	0		47
	PA	207	1		208	220	3		223
	MLFP	207	1		208	229	3		232
5020	ELG	0	42	503	545	0	128	600	728
Hartley	EORV	361	42	142	545	361	128	239	728
Springs	NA	418	5		423	418	5		423
	PA	503	42		545	600	128		728
	MLFP	503	42		545	607	128		735
5021	ELG	0	10	1,060	1,070	0	29	1,060	1,089
Ruins	EORV	530	10	530	1,070	530	29	530	1,089
	NA	777	0		777	777	0		777
	PA	1,060	10		1,070	1,060	29		1,089
	MLFP	1,060	10		1,070	1,339	29		1,368
5022	ELG	0	0	38	38	0	3	108	111
Barton	EORV	19	0	19	38	19	3	89	111
Arroyo	NA	36	0		36	36	0		36
	PA	38	0		38	108	3		111
	MLFP	38	0		38	108	3		111
5023	ELG	0	0	8	8	0	3	36	39
Kochis	EORV	4	0	4	8	4	3	32	39
Arroyo	NA	59	0		59	59	0		59
	PA	8	0		8	36	3		39
	MLFP	8	0		8	36	3		39
5024	ELG	0	5	39	44	0	15	50	65
Animas	EORV	39	5	0	44	39	15	11	65
River	NA	2	0		2	2	0		2
	PA	39	5		44	50	15		65
	MLFP	39	5		44	57	15		72
5025	ELG	0	5	82	87	0	15	120	135
Riverside	EORV	41	5	41	87	41	15	79	135
Community	NA	49	0		49	49	0		49
	PA	82	5		87	120	15		135
	MLFP	82	5		87	120	15		135

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5027	ELG	0	1	231	232	0	3	250	253
East	EORV	116	1	115	232	116	3	134	253
Farmington	NA	365	0		365	365	0		365
Community	PA	231	1		232	250	3		253
	MLFP	231	1		232	250	3		253
5028	ELG	0	8	141	149	0	25	200	225
Crouch	EORV	68	8	73	149	68	25	132	225
Mesa	NA	308	0		308	308	0		308
	PA	141	8		149	200	25		225
	MLFP	141	8		149	200	25		225
5029	ELG	0	8	413	421	0	25	700	725
Crawford	EORV	376	8	37	421	376	25	324	725
Mesa	NA	481	0		481	481	0		481
Community	PA	413	8		421	700	25		725
	MLFP	413	8		421	700	25		725
5030	ELG	0	5	134	139	0	15	150	165
Aztec	EORV	129	5	5	139	129	15	21	165
Community	NA	64	0		64	64	0		64
	PA	134	5		139	150	15		165
	MLFP	134	5		139	150	15		165
5031	ELG	0	8	448	456	0	25	680	705
Bloomfield	EORV	355	8	93	456	355	25	325	705
Community	NA	448	0		448	448	0		448
	PA	448	8		456	680	25		705
	MLFP	448	8		456	680	25		705
5032	ELG	0	5	650	655	0	15	725	740
South	EORV	325	5	325	655	325	15	400	740
Aztec	NA	384	0		384	384	0		384
	PA	650	5		655	725	15		740
	MLFP	650	5		655	866	15		881
5033	ELG	0	10	437	447	0	29	450	479
Potter	EORV	216	10	221	447	216	29	234	479
Canyon	NA	370	0		370	370	0		370
	PA	437	10		447	450	29		479
	MLFP	437	10		447	561	29		590
5034	ELG	0	0	158	158	0	3	160	163
South	EORV	79	0	79	158	79	3	81	163
Hogback	NA	69	0		69	69	0		69
	PA	158	0		158	160	3		163
	MLFP	158	0		158	160	3		163

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5035	ELG	0	8	374	382	0	25	419	444
Gonzales	EORV	373	8	1	382	373	25	46	444
Community	NA	208	0		208	208	0		208
	PA	374	8		382	419	25		444
	MLFP	374	8		382	419	25		444
5036	ELG	0	7	533	540	0	21	533	554
North	EORV	267	7	266	540	267	21	266	554
Place	NA	190	0		190	190	0		190
	PA	533	7		540	533	21		554
	MLFP	533	7		540	650	21		671
5037	ELG	0	16	1,521	1,537	0	50	1,600	1,650
Knickerbocker	EORV	774	16	747	1,537	774	50	826	1,650
Peak	NA	556	12		568	556	12		568
Community	PA	1,521	16		1,537	1,600	50		1,650
	MLFP	1,521	16		1,537	2,672	50		2,722
5038	ELG	0	1	66	67	0	3	108	111
Blanquito	EORV	66	1	0	67	66	3	42	111
	NA	43	0		43	43	0		43
	PA	66	1		67	108	3		111
	MLFP	66	1		67	108	3		111
5039	ELG	0	12	494	506	0	43	961	1,004
North	EORV	260	12	234	506	260	43	701	1,004
Blanco	NA	473	0		473	473	0		473
Community	PA	494	12		506	961	43		1,004
	MLFP	494	12		506	1,074	43		1,117
5040	ELG	0	2	299	301	0	7	400	407
Five	EORV	150	2	149	301	150	7	250	407
Mile	NA	118	0		118	118	0		118
Community	PA	299	2		301	400	7		407
	MLFP	299	2		301	400	7		407
5041	ELG	0	5	492	497	0	15	669	684
Pump	EORV	295	5	197	497	295	15	374	684
Canyon	NA	308	0		308	308	0		308
Community	PA	492	5		497	669	15		684
	MLFP	492	5		497	669	15		684
5043	ELG	0	7	522	529	0	21	545	566
Crow	EORV	260	7	262	529	260	21	285	566
Canyon	NA	321	0		321	321	0		321
	PA	522	7		529	522	21		543
	MLFP	522	7		529	545	21		566

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5044	ELG	0	5	108	113	0	15	109	124
Archuleta	EORV	56	5	52	113	56	15	53	124
Community	NA	55	0		55	55	0		55
	PA	108	5		113	109	15		124
	MLFP	108	5		113	109	15		124
5045	ELG	0	7	213	220	0	21	240	261
Hart	EORV	107	7	106	220	107	21	133	261
Canyon	NA	88	0		88	88	0		88
	PA	213	7		220	240	21		261
	MLFP	213	7		220	347	21		368
5046	ELG	0	10	81	91	0	29	125	154
Hart	EORV	41	10	40	91	41	29	84	154
Mountain	NA	5	0		5	5	0		5
	PA	81	10		91	125	29		154
	MLFP	81	10		91	154	29		183
5048	ELG	0	2	75	77	0	5	156	161
Little	EORV	37	2	38	77	37	5	119	161
Pump	NA	91	0		91	91	0		91
	PA	75	2		77	156	5		161
	MLFP	75	2		77	187	5		192
5049	ELG	0	23	269	292	0	70	269	339
Alamo	EORV	135	23	134	292	135	70	134	339
Canyon	NA	165	12		177	165	12		177
	PA	269	23		292	269	70		339
	MLFP	269	23		292	315	70		385
5050	ELG	0	21	662	683	0	62	662	724
Sandstone	EORV	331	21	331	683	331	62	331	724
Canyon	NA	385	12		397	385	12		397
	PA	662	21		683	869	62		931
	MLFP	662	21		683	1,238	62		1,300
5051	ELG	0	18	49	67	0	53	75	128
Cutter	EORV	26	18	23	67	26	53	49	128
Dam	NA	122	5		127	122	5		127
	PA	49	18		67	75	53		128
	MLFP	49	18		67	75	53		128
5054	ELG	0	44	180	224	0	132	327	459
Rattlesnake	EORV	77	44	103	224	77	132	250	459
Canyon	NA	167	0		167	167	0		167
	PA	180	44		224	327	132		459
	MLFP	180	44		224	408	132		540

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5057	ELG	0	15	0	15	0	20	0	20
Mentzel	EORV	0	15	0	15	0	20	0	20
Mesa	NA	60	0		60	60	0		60
	PA	0	15		15	0	20		20
	MLFP	0	15		15	0	20		20
5060	ELG	0	16	555	571	0	48	804	852
Manuel	EORV	299	16	256	571	299	48	505	852
Canyon	NA	586	0		586	586	0		586
	PA	555	16		571	804	48		852
	MLFP	555	16		571	955	48		1,003
5061	ELG	0	13	146	159	0	38	216	254
Manuel	EORV	71	13	75	159	71	38	145	254
Mesa	NA	186	0		186	186	0		186
	PA	146	13		159	216	38		254
	MLFP	146	13		159	236	38		274
5062	ELG	0	34	467	501	0	101	688	789
Frances	EORV	241	34	226	501	241	101	447	789
Canyon	NA	636	0		636	636	0		636
	PA	467	34		501	688	101		789
	MLFP	467	34		501	893	101		994
5063	ELG	0	16	90	106	0	50	150	200
La Baca	EORV	43	16	47	106	43	58	107	200
Canyon	NA	53	0		53	53	0		53
	PA	90	16		106	150	50		200
	MLFP	90	16		106	221	50		271
5064	ELG	0	27	564	591	0	81	800	881
Sims	EORV	282	27	282	591	282	81	518	881
Mesa	NA	1,022	0		1,022	1,022	0		1,022
	PA	564	27		591	800	81		881
	MLFP	564	27		591	905	81		986
5065	ELG	0	3	108	111	0	38	204	242
Lopez	EORV	53	3	55	111	53	38	151	242
Canyon	NA	96	0		96	96	0		96
	PA	108	3		111	204	38		242
	MLFP	108	3		111	234	38		272
5066	ELG	0	17	17	34	0	52	25	77
La Jara	EORV	8	17	9	34	8	52	17	77
Canyon	NA	0	0		0	0	0		0
	PA	17	17		34	25	52		77
	MLFP	17	17		34	25	52		77

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5067	ELG	0	3	13	16	0	20	20	40
Cemetery	EORV	6	3	7	16	6	20	14	40
Ridge	NA	37	0		37	37	0		37
	PA	13	3		16	20	20		40
	MLFP	13	3		16	20	20		40
5068	ELG	0	9	226	235	0	26	400	426
Trujillo	EORV	109	9	117	235	109	26	291	426
Spring	NA	201	0		201	201	0		201
	PA	226	9		235	400	26		426
	MLFP	226	9		235	412	26		438
5069	ELG	0	10	347	357	0	26	550	576
East	EORV	186	10	161	357	186	26	364	576
Armenta	NA	111	0		111	111	0		111
	PA	347	10		357	550	26		576
	MLFP	347	10		357	607	26		633
5070	ELG	0	20	2,956	2,976	0	30	3,828	3,858
Jacquez	EORV	1,730	20	1,226	2,976	1,730	30	2,098	3,858
Canyon	NA	2,239	0		2,239	2,239	0		2,239
Community	PA	2,956	20		2,976	3,828	30		3,858
	MLFP	2,956	20		2,976	4,138	30		4,168
5071	ELG	0	16	679	695	0	59	750	809
Harris	EORV	344	16	335	695	344	59	406	809
Mesa	NA	674	0		674	674	0		674
	PA	679	16		695	750	59		809
	MLFP	679	16		695	750	59		809
5072	ELG	0	48	3,433	3,481	0	145	4,500	4,645
Angel	EORV	1,777	48	1,656	3,481	1,777	145	2,723	4,645
Peak	NA	2,070	0		2,070	2,070	0		2,070
	PA	3,433	48		3,481	4,500	145		4,645
	MLFP	3,433	48		3,481	4,500	145		4,645
5073	ELG	0	14	1,356	1,370	0	43	1,356	1,399
Jacquez	EORV	678	14	678	1,370	678	43	678	1,399
Community	NA	1,146	0		1,146	1,146	0		1,146
	PA	1,356	14		1,370	1,356	43		1,399
	MLFP	1,356	14		1,370	1,730	43		1,773
5074	ELG	0	10	763	773	0	32	800	832
	EORV	739	10	24	773	739	32	61	832
Forty-	NA	424	0		424	424	0		424
Four	PA	763	10		773	800	32		832
	MLFP	763	10		773	800	32		832

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5075	ELG	0	10	150	160	0	30	200	230
Huerfanito	EORV	72	10	78	160	72	30	128	230
Peak	NA	99	0		99	99	0		99
	PA	150	10		160	200	30		230
	MLFP	150	10		160	200	30		230
5076	ELG	0	22	1,559	1,581	0	66	2,050	2,116
Dufers	EORV	822	22	737	1,581	822	66	1,228	2,116
Point	NA	1,709	0		1,709	1,709	0		1,709
	PA	1,559	22		1,581	2,050	66		2,116
	MLFP	1,559	22		1,581	2,331	66		2,397
5077	ELG	0	8	826	834	0	66	1,000	1,066
Huerfano	EORV	667	8	159	834	667	66	333	1,066
	NA	383	0		383	383	0		383
	PA	826	8		834	1,000	66		1,066
	MLFP	826	8		834	1,038	66		1,104
5078	ELG	0	5	646	651	0	15	867	882
S. Blanco	EORV	322	5	324	651	322	15	545	882
Community	NA	874	0		874	874	0		874
	PA	646	5		651	867	15		882
	MLFP	646	5		651	933	15		948
5079	ELG	0	7	243	250	0	21	348	369
Petrified	EORV	146	7	97	250	146	21	202	369
Forest	NA	0	0		0	0	0		0
	PA	243	7		250	348	21		369
	MLFP	243	7		270	437	21		458
5080	ELG	0	7	231	238	0	21	480	501
Sweetwater	EORV	116	7	115	238	116	21	364	501
	NA	320	0		320	320	0		320
	PA	231	7		238	480	21		501
	MLFP	231	7		238	622	21		643
5081	ELG	0	0	638	638	0	0	659	659
Blanco	EORV	319	0	319	638	319	0	340	659
Trading	NA	948	0		948	948	0		948
Post	PA	638	0		638	659	0		659
	MLFP	638	0		638	659	0		659
5082	ELG	0	0	126	126	0	0	300	300
Mission	EORV	89	0	37	126	89	0	211	300
	NA	162	0		162	162	0		162
	PA	126	0		126	300	0		300
	MLFP	126	0		126	300	0		300

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5083	ELG	0	9	2,891	2,900	0	28	3,509	3,537
Largo	EORV	1,446	9	1,445	2,900	1,446	28	2,063	3,537
Community	NA	3,474	0		3,474	3,474	0		3,474
	PA	2,891	9		2,900	3,509	28		3,537
	MLFP	2,891	9		2,900	3,731	28		3,759
5084	ELG	0	7	306	313	0	21	440	461
Sheep	EORV	153	7	153	313	153	21	287	461
Well	NA	116	0		116	116	0		116
	PA	306	7		313	440	21		461
	MLFP	306	7		313	534	21		555
5085	ELG	0	0	50	50	0	0	96	96
Nageezi	EORV	25	0	25	50	25	0	71	96
	NA	82	0		82	82	0		82
	PA	50	0		50	96	0		96
	MLFP	50	0		50	108	0		108
5086	ELG	0	0	21	21	0	0	40	40
Turley	EORV	11	0	10	21	11	0	29	40
	NA	17	0		17	17	0		17
	PA	21	0		21	40	0		40
	MLFP	21	0		21	40	0		40
5087	ELG	0	10	269	279	0	29	391	420
Martinez	EORV	134	10	135	279	134	29	257	420
Mesa	NA	232	0		232	232	0		232
	PA	269	10		279	391	29		420
	MLFP	269	10		279	552	29		581
5088	ELG	0	14	233	247	0	43	350	393
Baltzar	EORV	117	14	116	247	117	43	233	393
Peak	NA	259	0		259	259	0		259
	PA	233	14		247	350	43		393
	MLFP	233	14		247	356	43		399
5089	ELG	0	7	131	138	0	21	250	271
Navajo	EORV	68	7	63	138	68	21	182	271
Dam	NA	287	0		287	287	0		287
	PA	131	7		138	250	21		271
	MLFP	131	7		138	405	21		426
5090	ELG	0	5	65	70	0	15	100	115
Cool	EORV	32	5	33	70	32	15	68	115
Water	NA	75	0		75	75	0		75
Canyon	PA	65	5		70	100	15		115
	MLFP	65	5		70	143	15		158

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5091	ELG	0	7	276	283	0	20	528	548
Manzanares	EORV	138	7	138	283	138	20	390	548
Mesa	NA	284	0		284	284	0		284
	PA	276	7		283	528	20		548
	MLFP	276	7		283	559	20		579
5092	ELG	0	14	361	375	0	43	461	504
Navajo	EORV	307	14	54	375	307	43	154	504
City	NA	273	0		273	273	0		273
	PA	361	14		375	461	43		504
	MLFP	361	14		375	522	43		565
5093	ELG	0	5	953	958	0	15	1,152	1,167
Jaramillo	EORV	533	5	420	958	533	15	619	1,167
Community	NA	1,046	0		1,046	1,046	0		1,046
	PA	953	5		958	1,152	15		1,167
	MLFP	953	5		958	1,381	15		1,396
5094	ELG	0	24	502	526	0	72	659	731
Ridge	EORV	493	24	9	526	493	72	166	731
Road	NA	453	0		453	453	0		453
	PA	502	24		526	659	72		731
	MLFP	502	24		526	701	72		773
5096	ELG	0	10	103	113	0	29	225	254
Jesus	EORV	52	10	51	113	52	29	173	254
Mesa	NA	199	10		209	199	10		209
	PA	103	10		113	225	29		254
	MLFP	103	10		113	347	29		376
5097	ELG	0	14	138	152	0	43	250	293
Gobernador	EORV	69	14	69	152	69	43	181	293
Canyon	NA	442	0		442	442	0		442
	PA	138	14		152	250	43		293
	MLFP	138	14		152	264	43		307
5098	ELG	0	22	126	148	0	65	252	317
Devils	EORV	57	22	69	148	57	65	195	317
Spring	NA	217	0		217	217	0		217
	PA	126	22		148	252	65		317
	MLFP	126	22		148	357	65		422
5099	ELG	0	7	44	51	0	20	50	70
4-Mile	EORV	21	7	23	51	21	20	29	70
Canyon	NA	49	0		49	49	0		49
	PA	44	7		51	50	20		70
	MLFP	44	7		51	50	20		70

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5100	ELG	0	10	157	167	0	29	230	259
Gobernador	EORV	94	10	63	167	94	29	136	259
Camp	NA	273	0		273	273	0		273
	PA	157	10		167	230	29		259
	MLFP	157	10		167	294	29		323
5102	ELG	0	10	145	155	0	29	168	197
4-Mile	EORV	122	10	23	155	122	29	46	197
Mesa	NA	179	0		179	179	0		179
	PA	145	10		155	168	29		197
	MLFP	145	10		155	188	29		217
5103	ELG	0	0	4	4	0	0	10	10
Headwater	EORV	2	0	2	4	2	0	8	10
Canyon	NA	27	0		27	27	0		27
	PA	4	0		4	10	0		10
	MLFP	4	0		4	10	0		10
5104	ELG	0	43	170	213	0	132	200	332
Laguna	EORV	92	43	78	213	92	132	108	332
Seca	NA	214	0		214	214	0		214
Draw	PA	170	43		213	200	132		332
	MLFP	170	43		213	223	132		355
5105	ELG	0	66	310	376	0	199	430	629
Snyder	EORV	295	66	15	376	295	199	135	629
Peak	NA	117	0		117	117	0		117
	PA	310	66		376	430	199		629
	MLFP	310	66		376	432	199		631
5106	ELG	0	127	3,192	3,319	0	381	4,368	4,749
Canyon	EORV	1,974	127	1,218	3,319	1,974	381	2,394	4,749
Largo	NA	3,243	0		3,243	3,243	0		3,243
	PA	3,192	127		3,319	4,368	381		4,749
	MLFP	3,192	127		3,319	4,630	381		5,011
5108	ELG	0	43	351	394	0	129	396	525
Carrizo	EORV	293	43	58	394	293	129	103	525
Canyon	NA	312	0		312	312	0		312
	PA	351	43		394	396	129		525
	MLFP	351	43		394	411	129		540
5109	ELG	0	25	418	443	0	74	716	790
Munoz	EORV	267	25	151	443	267	74	449	790
Canyon	NA	397	0		397	397	0		397
	PA	418	25		443	716	74		790
	MLFP	418	25		443	764	74		838

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5110	ELG	0	4	180	184	0	11	180	191
Otis	EORV	180	4	0	184	180	11	0	191
	NA	13	0		13	13	0		13
	PA	180	4		184	180	11		191
	MLFP	180	4		184	180	11		191
5111	ELG	0	0	245	245	0	0	378	378
South	EORV	152	0	93	245	152	0	226	378
Equus	NA	97	0		97	97	0		97
	PA	245	0		245	378	0		378
	MLFP	245	0		245	378	0		378
5112	ELG	0	43	227	270	0	127	350	477
Pioche	EORV	176	43	51	270	176	127	174	477
Canyon	NA	295	0		295	295	0		295
	PA	227	43		270	350	127		477
	MLFP	227	43		270	402	127		529
5113	ELG	0	260	2,563	2,823	0	784	3,500	4,284
Ensenada	EORV	2,548	260	15	2,823	2,548	784	952	4,284
Mesa	NA	1,662	552		2,214	1,662	552		2,214
	PA	2,563	260		2,823	3,500	784		4,284
	MLFP	2,563	260		2,823	3,531	784		4,315
5117	ELG	0	31	332	363	0	98	336	434
Carter	EORV	232	31	100	363	232	98	104	434
Mesa	NA	130	0		130	130	0		130
	PA	332	31		363	336	98		434
	MLFP	332	31		363	664	98		762
5119	ELG	0	116	3,752	3,868	0	416	5,000	5,416
Rancho	EORV	2,447	116	1,305	3,868	2,447	416	2,553	5,416
Largo	NA	5,246	0		5,246	5,246	0		5,246
	PA	3,752	116		3,868	5,000	416		5,416
	MLFP	3,752	116		3,868	7,353	416		7,769
5120	ELG	0	13	58	71	0	40	100	140
La Parita	EORV	26	13	32	71	26	40	74	140
Canyon	NA	151	0		151	151	0		151
	PA	58	13		71	100	40		140
	MLFP	58	13		71	136	40		176
5121	ELG	0	0	63	63	0	0	85	85
North	EORV	63	0		63	63	0	22	85
Equus	NA	142	0		142	142	0		142
	PA	63	0		63	85	0		85
	MLFP	63	0		63	85	0		85

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5122	ELG	0	14	279	293	0	43	300	343
Eagle	EORV	136	14	143	293	136	43	164	343
Rock	NA	206	0		206	206	0		206
	PA	279	14		293	300	43		343
	MLFP	279	14		293	300	43		343
5123	ELG	0	5	9	14	0	15	20	35
Escrito	EORV	9	5	0	14	9	15	11	35
Spring	NA	23	0		23	23	0		23
	PA	9	5		14	20	15		35
	MLFP	9	5		14	20	15		35
5124	ELG	0	0	133	133	0	0	250	250
Gallo	EORV	126	0	7	133	126	0	124	250
Canyon	NA	74	0		74	74	0		74
	PA	133	0		133	250	0		250
	MLFP	133	0		133	295	0		295
5125	ELG	0	14	677	691	0	42	800	842
Kutz	EORV	346	14	331	691	346	42	454	842
Canyon	NA	1,172	0		1,172	1,172	0		1,172
	PA	677	14		691	800	42		842
	MLFP	677	14		691	908	42		950
5126	ELG	0	7	143	150	0	21	200	221
Head	EORV	74	7	69	150	74	21	126	221
Canyon	NA	466	0		466	466	0		466
	PA	143	7		150	200	21		221
	MLFP	143	7		150	200	21		221
5127	ELG	0	2	157	159	0	7	192	199
Gallegos	EORV	78	2	79	159	78	7	114	199
Canyon	NA	130	0		130	130	0		130
	PA	157	2		159	192	7		199
	MLFP	157	2		159	192	7		199
5128	ELG	0	1	33	34	0	3	75	78
Horn	EORV	33	1		34	33	3	42	78
Canyon	NA	28	0		28	28	0		28
	PA	33	1		34	75	3		78
	MLFP	33	1		34	108	3		111
5129	ELG	0	24	243	267	0	72	360	432
Stewart	EORV	122	24	121	2678	122	72	238	432
Canyon	NA	246	0		246	246	0		246
	PA	243	24		267	360	72		432
	MLFP	243	24		267	360	72		432

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5130	ELG	0	36	79	115	0	109	90	199
Santo	EORV	62	36	17	115	62	109	28	199
Nino	NA	83	0		83	83	0		83
	PA	79	36		115	90	109		199
	MLFP	79	36		115	90	109		199
5131	ELG	0	2	137	139	0	6	168	174
Bonito	EORV	86	2	51	139	86	6	82	174
	NA	17	0		17	17	0		17
	PA	137	2		139	168	6		174
	MLFP	137	2		139	168	6		174
5132	ELG	0	2	41	43	0	7	48	55
Rivershore	EORV	41	2		43	41	7	7	55
	NA	36	0		36	36	0		36
	PA	41	2		43	48	7		55
	MLFP	41	2		43	48	7		55
5133	ELG	0	2	1	3	0	7	5	12
Jewett	EORV	1	2		3	1	7	4	12
Valley	NA	12	0		12	12	0		12
	PA	1	2		3	5	7		12
	MLFP	1	2		3	5	7		12
5134	ELG	0	2	4	6	0	7	8	15
San Juan	EORV	1	2	3	6	1	7	7	15
River	NA	17	0		17	17	0		17
	PA	4	2		6	8	7		15
	MLFP	4	2		6	8	7		15
5135	ELG	0	22	290	312	0	67	350	417
La Jara	EORV	145	22	145	312	145	67	205	417
Mesa	NA	349	0		349	349	0		349
	PA	290	22		312	350	67		417
	MLFP	290	22		312	428	67		495
5136	ELG	0	1	16	17	0	3	20	23
Hargis	EORV	16	1		17	16	3	4	23
Arroyo	NA	22	0		22	22	0		22
	PA	16	1		17	20	3		23
	MLFP	16	1		17	20	3		23
5137	ELG	0	7	181	188	0	21	188	209
Chico	EORV	87	7	94	188	87	21	101	209
	NA	77	0		77	77	0		77
	PA	181	7		188	188	21		209
	MLFP	181	7		188	188	21		209

Allotment No. and Name	Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Total AUMs
Intensive Management									
5138	ELG	0	7	233	240	0	21	322	343
North	EORV	114	7	119	240	114	21	208	343
Glade	NA	41	0		41	41	0		41
	PA	233	7		240	322	21		343
	MLFP	233	7		240	322	21		343
5139	ELG	0	20	489	509	0	70	500	570
Coach	EORV	235	20	254	509	235	70	265	570
	NA	53	0		53	53	0		53
	PA	489	20		509	500	70		570
	MLFP	489	20		509	500	70		570
5140	ELG	0	19	860	879	0	56	100	1,056
Flora	EORV	430	19	438	879	430	56	570	1,056
Vista	NA	588	0		588	588	0		588
	PA	860	19		879	1,000	56		1,056
	MLFP	860	19		879	1,166	56		1,222

TOTALS

Alternative	Proposed (1980) Livestock AUMs	Wildlife AUMs	Other AUMs	Wild Horse AUMs	Total AUMs	Projected (Year 2000) Livestock AUMs	Wildlife AUMs	Other AUMs	Wild Horse AUMs	Total AUMs
ELG	0	5,799	69,191	420	75,410	0	16,630	90,167	420	107,217
EORV	42,041	5,799	27,150	420	75,410	42,041	16,630	48,126	420	107,217
NA	66,146	5,799	0	0	71,945	66,146	5,799	0	0	71,945
PA	69,335	5,799	0	276	75,410	90,311	16,630	0	276	107,217
MLFP	69,335	5,799	0	276	75,410	106,748	16,630	0	276	123,654

Source: BLM Planning Documents, 1979.

Notes: a/ ELG - Elimination of Livestock Grazing Alternative; EORV - Enhancement of Other Resource Values Alternative; NA - No Action Alternative; PA - Proposed Action; MLFP - Maximization of Livestock Forage Production Alternative. The Proposed Action and alternatives are presented in a different order from that discussed in the text because it is felt that this revised order provides a clearer comparison of forage allocation levels (from low to high).

b/ Allocation includes 420 AUMs for wild horses.

c/ Allocation includes 276 AUMs for wild horses.

APPENDIX H-6

ADJUSTMENTS IN LIVESTOCK AUMS FROM PREFERENCE[a]

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term Inc.	NA Short-Term Dec.	NA Long-Term Inc.	NA Long-Term Dec.[c]	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Existing AMPs																	
5005	Shumway Arroyo		325				278				70	nc[d]	n		70	nc	nc
5026	Lonetree Mountain		945				360				753		537		753		537
5047	Animas Comm.		468				463				218	90			218	466	
5052	Tank Mtn. Comm.		921				405				274	nc	nc		274	360	
5053	Mt. Nebo		258				156				211		160		211		160
5055	Pump Mesa		1,839				1,180				1,437		755		1,437	2,088	
5056	Middle Mesa		382				7			nc	nc	nc	nc	nc	nc	857	
5058	Rosa Comm.		763				231			nc	nc	119		nc	nc	119	
5059	Frances Mesa		1,224				539				892		604		892		397
5095	Jesus Canyon		256				87				146	nc	nc		146	333	
5107	Delgadito Mesa		651				261				285	nc	nc		285	248	
5114	Ice Canyon		2,598				1,751				1,875		984		1,875		984
5115	Superior Mesa		1,939				868				1,075	nc	nc		1,075	1,044	
5116	Gonzales Mesa		704				141				498		407		498		293
5118	Crow Mesa		1,495				475				1,046		845		1,046		642
Subtotal AMPs			14,768				7,202				8,780	209	4,292		8,780	5,515	3,013

APPENDIX H-6 (cont'd)

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term Inc.	NA Short-Term Dec.	NA Long-Term Inc.	NA Long-Term Dec.[c]	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5001	North Hogback		232				156				95	nc	nc		95	nc	nc
5002	Waterflow Comm.		158				75			17		130		17		130	
5003	Coal Flats		59				79			45		66		45		66	
5004	Steven's Arroyo		151				74				151	nc	nc		151	nc	nc
5006	Cline Arroyo		61				192			31		53		31		53	
5007	Twin Mounds		632				492				489		265		489		265
5008	Norton Flats		75				152			62		153		62		153	
5009	Cottonwood Arroyo Comm.		576				323				417		328		417		328
5010	Pinon Mesa		250				291				81	nc	nc		81	nc	nc
5011	Coalbank Canyon		360				216				272		182		272		70
5012	Jones Canyon		317				131				277		227		277		227
5013	Thomas Canyon		206				125				206		206		206		206
5014	State Line		138				90				106		66		106		48
5015	Coyote Hills	17					19			135		152		135		183	
5016	Farmington Glade		706				32				365	nc	nc		365	214	
5017	McDermott Wash		140				89				55	nc	nc		55	nc	nc

o.	otment me	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term Inc.	NA Short-Term Dec.	NA Long-Term Inc.	NA Long-Term Dec.[c]	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.	MLFP Long-Term Inc.	MLFP Long-Term Dec.
itens	Manage t																
18	a Plata mm.		175				99				60	nc	nc		60	23	
19	dobe Do		65				121			39		52		39		61	
)	Hartley ngs		75				18			67		164		67		171	
	Ruins		298				51			232		232		232		511	
5	Barton Ar)		89				72				70	nc	nc		70	nc	nc
5	Kochis		32			23					28	nc	nc		28	nc	nc
5(	Animas Riv	12					25			12		23		12		30	
5(	Riverside C m.		79				71				38	nc	nc		38	nc	nc
5027	East Farm. Comm.		400				151				285		266		285		266
5028	Crouch Mesa		412				172				339		280		339		280
5029	Crawford Mesa Comm.		373				268				336		49		336		49
5030	Aztec Comm.		21				86				16	nc	nc		16	nc	nc
5031	Bloomfield Comm.		659				566				566		334		566		334
5032	South Aztec		400				341				75	nc	nc		75	141	
5033	Potter Canyon		193				39			28		41		28		152	
5034	South Hogback		20				30			59		61		59		61	

APPENDIX H-6 (cont'd)

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term Inc.	NA Short-Term Dec.	NA Long-Term Inc.	NA Long-Term Dec.[c]	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5035	Gonzales Comm.	50				115				51		96		51		96	
5036	North Place		141			218				125		125		125		242	
5037	Knickerbocker Peak Comm.		720			938				27		106		27		1,178	
5038	Blanquito		30			53					30	12			30	12	
5039	North Blanco Comm.		701			488					467	nc	nc		467	113	
5040	Five Mile Comm.		68			100				81		182		81		182	
5041	Pump Canyon Comm.		374			361					177	nc	nc		177	nc	nc
5042	Scattered Tracts (unalloted)																
5043	Crow Canyon		105			44				157		157		157		180	
5044	Archuleta Comm.		4			5				48		49		48		49	
5045	Hart Canyon		68			87				38		65		38		172	
5046	Hart Mtn.		151			187					111		67		111		38
5048	Little Pump		119			65					81	nc	nc		81	31	
5049	Alamo Canyon		105			75				29		29		29		75	
5050	Sandstone Canyon		317			263				14		221		14		590	
5051	Cutter Dam		220			124					197		171		197		171

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term Inc.	NA Short-Term Dec.	NA Long-Term Inc.	NA Long-Term Dec.[c]	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5054	Rattlesnake Canyon		250				160				147	nc	nc		147	81	
5057	Mentzel Mesa		60			nc	nc				60		60		60		60
5060	Manuel Canyon		505				218				249	nc	nc		249	151	
5061	Manuel Mesa		145				30				70	nc	nc		70	20	
5062	Frances Canyon		447				52				221	nc	nc		221	205	
5063	La Baca Canyon		201				191				154		94		154		23
5064	Sims Mesa		669			71					387		151		387		46
5065	Lopez Canyon		151				108				96	nc	nc		96	30	
5066	La Jara Canyon	8				nc	nc	nc	nc	17		25		17		25	
5067	Cemetery Ridge		66				35				59		52		59		52
5068	Trujillo Spring		287				195				170	4			170	16	
5069	East Armenta		750				825				589		386		589		182
5070	Jacquez Canyon Comm.		2,098				1,589				872	nc	nc		872	310	
5071	Harris Mesa		616				286				281		210		281		210
5072	Angel Peak		4,643				4,350				2,987		1,920		2,987		1,920
5073	Jacquez Comm.		468			nc	nc	nc	nc	210		210		210		584	

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term Inc.	NA Short-Term Dec.	NA Long-Term Inc.	NA Long-Term Dec.[c]	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5074	44 Allot.		425				740				401		364		401		364
5075	Huerfanito Peak		192				165				114		64		114		64
5076	Dufers Point		2,484				1,597				1,747		1,256		1,747		975
5077	Huerfano		1,138				1,422				979		805		979		767
5078	S. Blanco Comm.		545			7					221	nc	nc		221	66	
5079	Petrified Forest		202				348				105	nc	nc		105	89	
5080	Sweetwater		568				364				453		204		453		62
5081	Blanco Trading Post		340			289					21	nc	nc		21	nc	nc
5082	Mission		211				138				174	nc	nc		174	nc	nc
5083	Largo Comm.		2,496				468				1,051		433		1,051		211
5084	Sheep Well		495				532				342		208		342		114
5085	Nageezi		71				14				46	nc	nc		46	12	
5086	Turley		61				55				51		32		51		32
5087	Martinez Mesa		257				159				122	nc	nc		122	161	
5088	Baltzar Peak		429				287				313		196		313		190
5089	Navajo Dam		240				21				177		58		177	97	

APPENDIX H-6 (cont'd)

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term Inc.	NA Short-Term Dec.	NA Long-Term Inc.	NA Long-Term Dec.[c]	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5090	Cool Water Canyon		100				57				67		32		67	11	
5091	Manzanares Mesa		390				244				252	nc	nc		252	31	
5092	Navajo City		354				388				300		200		300		139
5093	Jaramillo Comm.		619				106				199	nc	nc		199	229	
5094	Ridge Road		166				206				157	nc	nc		157	42	
5096	Jesus Mesa		284				137				233		111		233	11	
5097	Gobernador Canyon		735				362				666		554		666		540
5098	Devils Spring		195				35				126	nc	nc		126	105	
5099	4-Mile Canyon		75				47				52		46		52		46
5100	Gobernador Camp		136			43					73	nc	nc		73	64	
5101	No allotment assigned																
5102	4-Mile Mesa		46			11					23	nc	nc		23	20	
5103	Headwater Canyon		33				8				31		25		31		25
5104	Laguna Seca Draw		200				78				122		92		122		69
5105	Snyder Peak		135				313				120	nc	nc		120	2	
5106	Canyon Largo		2,394				1,125				1,176	nc	nc		1,176	262	

APPENDIX H-6 (cont'd)

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term Inc.	NA Short-Term Dec.	NA Long-Term Inc.	NA Long-Term Dec.[c]	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5108	Carrizo Canyon		103				84				45	nc	nc		45	15	
5109	Munoz Canyon		449				319				298	nc	nc		298	48	
5110	Otis	125					42			125		125		125		125	
5111	South Equus		220				275				127	6			127	6	
5112	Pioche Canyon		448				329				397		274		397		222
5113	Ensenada Mesa		1,837				2,723				1,822		885		1,822		854
5117	Carter Mesa		104				206				4	nc	nc		4	328	
5119	Rancho Largo		6,169				3,370				4,864		3,616		4,864		1,263
5120	La Parita Canyon		130				5				98		56		98		20
5121	North Equus		69			10					69		47		69		47
5122	Eagle Rock		116				46			27		48		27		48	
5123	Escrito Spring		39				25				39		28		39		28
5124	Gallo Canyon		174				226				167		50		167		5
5125	Kutz Canyon		826			nc	nc				495		372		495		264
5126	Head Canyon		392			nc	nc				323		266		323		266
5127	Gallegos Canyon		114				62				35	nc	nc		35	nc	nc

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term Inc.	NA Short-Term Dec.	NA Long-Term Inc.	NA Long-Term Dec.[c]	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5128	Horn Canyon		51				56				51		9		51	24	
5129	Stewart Canyon		238				114				117	nc	nc		117	nc	nc
5130	Santo Nino		82				61				65		54		65		54
5131	Bonito		82				151				31	nc	nc		31	nc	nc
5132	Rivershore		7				12				7	nc	nc		7	nc	nc
5133	Jewett Valley		17				6				17		13		17		13
5134	San Juan River		17				1				14		10		14		10
5135	La Jara Mesa		619				415				474		414		474		336
5136	Hargis Arroyo		12				6				12		8		12		8
5137	Chico		57				67			37		44		37		44	
5138	North Glade		208				281				89	nc	nc		89	nc	nc
5139	Coach		145				327			109		120		109		120	
5140	Flora Vista		1,202				1,044				772		632		772		466
Subtotal Non-AMPs		212	51,774			454	35,477			1,822	32,078	2,751	16,728	1,822	32,078	8,251	12,229
Total		212	66,542			454	42,679			1,822	40,858	2,960	21,020	1,822	40,858	13,766	15,242

Source: BLM Planning Documents, 1979.

Note: [a] Elimination of Livestock Grazing Alternative not included - all AUMs would be allocated to wildlife and wild horses.

[b] EORV - Enhancement of Other Resource Values Alternative; NA - No Action Alternative; PA - Proposed Action; MLFP - Maximization of Livestock Forage Production Alternative.

[c] Figures for long term same as those given for short term.

[d] nc = No change from qualifications.

APPENDIX H-7

ADJUSTMENTS IN LIVESTOCK AUMS FROM AVERAGE LICENSED USE[a]

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term[d] Inc.	NA Short-Term[d] Dec.	NA Long-Term[d] Inc.	NA Long-Term[d] Dec.	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.[e]	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Existing AMPs																	
5005	Shumway Arroyo	47								208		278				278	
5026	Lonetree Mountain	585									393		177				177
5047	Animas Comm.	5								245		553				929	
5052	Tank Mtn. Comm.	516								131		405				765	
5053	Mt. Nebo	102									55		4				4
5055	Pump Mesa	659									257	425				3,268	
5056	Middle Mesa	375								7		7				864	
5058	Rosa Comm.	532								231		350				350	
5059	Frances Mesa	685									353		65			142	
5095	Jesus Canyon	169									59	87				420	
5107	Delgadito Mesa	390									24	261				509	
5114	Ice Canyon	847									124	767				767	
5115	Superior Mesa	1,071									207	868				1,912	
5116	Gonzales Mesa	563									357		266				152
5118	Crow Mesa	1,020									571		370				167
Subtotal AMPs		7,566								822	2,400	4,001	882			10,204	500

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term[d] Inc.	NA Short-Term[d] Dec.	NA Long-Term[d] Inc.	NA Long-Term[d] Dec.	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.[e]	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5001	North Hogback		76							61		156				156	
5002	Waterflow Comm.		83							92		205				205	
5003	Coal Flats	20								124		145				145	
5004	Steven's Arroyo		77								77	74				74	
5006	Cline Arroyo	131								223		245				245	
5007	Twin Mounds		140							3		227				227	
5008	Norton Flats	77								214		305				305	
5009	Cottonwood Arroyo Comm.		253								94		5				5
5010	Pinon Mesa	41								210		291				291	
5011	Coalbank Canyon		144								56	34				146	
5012	Jones Canyon		186								146		96				96
5013	Thomas Canyon		81								81		81				81
5014	State Line		48								16	24				42	
5015	Coyote Hills	36								154		171				202	
5016	Farmington Glade		674								333	32				246	
5017	McDermott Wash		51							34		89				89	

APPENDIX H-7 (cont'd)

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term[d] Inc.	NA Short-Term[d] Dec.	NA Long-Term[d] Inc.	NA Long-Term[d] Dec.	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.[e]	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5018	La Plata Comm.		76							39		99				122	
5019	Adobe Downs	56								160		173				182	
5020	Hartley Springs		57							85		182				189	
5021	Ruins		247							283		283				562	
5022	Barton Arroyo		17							2		72				72	
5023	Kochis		55								51		23				23
5024	Animas River	37								37		48				55	
5025	Riverside Comm.		8							33		71				71	
5027	East Farm. Comm.		249								134		115				115
5028	Crouch Mesa		240								167		108				108
5029	Crawford Mesa Comm.		105								68	219				219	
5030	Aztec Comm.	65								70		86				86	
5031	Bloomfield Comm.		93							[4]		232				232	
5032	South Aztec		59							266		341				482	
5033	Potter Canyon		154							67		80				191	
5034	South Hogback	10								89		91				91	

APPENDIX H-7 (cont'd)

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term[d] Inc.	NA Short-Term[d] Dec.	NA Long-Term[d] Inc.	NA Long-Term[d] Dec.	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.[e]	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5035	Gonzales Comm.	165								166		211				211	
5036	North Place	77								343		343				460	
5037	Knickerbocker Peak Comm.	218								965		1,044				2,116	
5038	Blanquito	23								23		65				65	
5039	North Blanco Comm.		213							21		488				601	
5040	Five Mile Comm.	32								181		282				282	
5041	Pump Canyon Comm.		13							184		361				361	
5042	Scattered Tracts (unalloted)																
5043	Crow Canyon		61							201		201				224	
5044	Archuleta Comm.	1								53		54				54	
5045	Hart Canyon	19								125		152				259	
5046	Hart Mtn.	36								76		120				149	
5048	Little Pump		54								16	65				96	
5049	Alamo Canyon		30							104		104				150	
5050	Sandstone Canyon		54							277		484				853	
5051	Cutter Dam		96								73		47				47

APPENDIX H-7 (cont'd)

Allotment No.	Name	FORV[b] Short-Term Inc.	FORV[b] Short-Term Dec.	FORV[b] Long-Term Inc.	FORV[b] Long-Term Dec.[e]	NA Short-Term[d] Inc.	NA Short-Term[d] Dec.	NA Long-Term[d] Inc.	NA Long-Term[d] Dec.	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.[e]	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5054	Rattlesnake Canyon		90							13		160				241	
5057	Mentzel Mesa		60								60		60				60
5060	Manuel Canyon		287								31	218				369	
5061	Manuel Mesa		115								40	30				50	
5062	Frances Canyon		395								169	52				257	
5063	La Baca Canyon		10							37		97				168	
5064	Sims Mesa		740								458		222				117
5065	Lopez Canyon		43							12		108				138	
5066	La Jara Canyon	8								17		25				25	
5067	Cemetery Ridge		31								24		17				17
5068	Trujillo Spring		92							25		199				211	
5069	East Armenta	75								236		439				643	
5070	Jacquez Canyon Comm.		509							717		1,589				1,899	
5071	Harris Mesa		330							5		76				76	
5072	Angel Peak		293							1,363		2,430				2,430	
5073	Jacquez Comm.		468							210		210				584	

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term[d] Inc.	NA Short-Term[d] Dec.	NA Long-Term[d] Inc.	NA Long-Term[d] Dec.	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.[e]	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5074	44 Allot.	315								339		376				376	
5075	Huerfanito Peak		27							51		101				101	
5076	Dufers Point		887								150	341				622	
5077	Huerfano	284								443		617				655	
5078	S. Blanco Comm.		552								228		7			59	
5079	Petrified Forest	146								243		348				437	
5080	Sweetwater		204								89	160				302	
5081	Blanco Trading Post		629								310		289				289
5082	Mission		73								36	138				138	
5083	Largo Comm.		2,028								583	35				257	
5084	Sheep Well	37								190		324				418	
5085	Nageezi		57								32	14				26	
5086	Turley		6							4		23				23	
5087	Martinez Mesa		98							37		159				320	
5088	Baltzar Peak		142								26	91				97	
5089	Navajo Dam		219								156		37			118	

APPENDIX H-7 (cont'd)

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term[d] Inc.	NA Short-Term[d] Dec.	NA Long-Term[d] Inc.	NA Long-Term[d] Dec.	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.[e]	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5090	Cool Water Canyon		43								10	25				68	
5091	Manzanares Mesa		146								8	244				275	
5092	Navajo City	34								88		188				249	
5093	Jaramillo Comm.		513								93	106				335	
5094	Ridge Road	40								49		206				248	
5096	Jesus Mesa		147								96	26				148	
5097	Gobernador Canyon		373								304		192				178
5098	Devils Spring		160								91	35				140	
5099	4-Mile Canyon		28								5	1				1	
5100	Gobernador Camp		179								116		43			21	
5101	No allotment assigned																
5102	4-Mile Mesa		57								34		11			9	
5103	Headwater Canyon		25								23		17				17
5104	Laguna Seca Draw		122								44		14			9	
5105	Snyder Peak	178								193		313				315	
5106	Canyon Largo		1,269								51	1,125				1,387	

APPENDIX H-7 (cont'd)

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term[d] Inc.	NA Short-Term[d] Dec.	NA Long-Term[d] Inc.	NA Long-Term[d] Dec.	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.[e]	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5108	Carrizo Canyon		19							39		84				99	
5109	Munoz Canyon		130							21		319				367	
5110	Otis	167								167		167				167	
5111	South Equus	55								148		281				281	
5112	Pioche Canyon		119								68	55				107	
5113	Ensenada Mesa	886								901		1,838				1,869	
5117	Carter Mesa	102								202		206				534	
5119	Rancho Largo		2,799								1,494		246			2,107	
5120	La Parita Canyon		125								93		51				15
5121	North Equus		79								79		57				57
5122	Eagle Rock		70							73		94				94	
5123	Escrito Spring		14								14		3				3
5124	Gallo Canyon	52								59		176				221	
5125	Kutz Canyon		826								495		372				264
5126	Head Canyon		392								323		266				266
5127	Gallegos Canyon		52							27		62				62	

Allotment No.	Name	EORV[b] Short-Term Inc.	EORV[b] Short-Term Dec.	EORV[b] Long-Term Inc.	EORV[b] Long-Term Dec.[c]	NA Short-Term Inc.[d]	NA Short-Term Dec.[d]	NA Long-Term Inc.[d]	NA Long-Term Dec.[d]	PA Short-Term Inc.	PA Short-Term Dec.	PA Long-Term Inc.	PA Long-Term Dec.	MLFP Short-Term Inc.	MLFP Short-Term Dec.[e]	MLFP Long-Term Inc.	MLFP Long-Term Dec.
Intensive Management																	
5128	Horn Canyon	5								5		47				80	
5129	Stewart Canyon		124								3	114				114	
5130	Santo Nino		21								4	7				7	
5131	Bonito	69								120		151				151	
5132	Rivershore	5								5		12				12	
5133	Jewett Valley		11								11		7				7
5134	San Juan River		16								13		9				9
5135	La Jara Mesa		204								59	1				79	
5136	Hargis Arroyo		6								6		2				2
5137	Chico	10								104		111				111	
5138	North Glade	73								192		281				281	
5139	Coach	182								436		447				447	
5140	Flora Vista		158							272		412				578	
Subtotal Non-AMPs		3,767	20,306							12,008	7,241	23,443	2,397			32,821	1,776
Total		3,767	27,872							12,830	9,641	27,444	3,279			43,025	2,276

Source: BLM Planning Documents, 1979.

Note: [a] Elimination of Livestock Grazing Alternative not included - all AUMs would be allocated to wildlife and wild horses.

[b] EORV - Enhancement of Other Resource Values Alternative; NA - No Action Alternative; PA - Proposed Action; MLFP - Maximization of Livestock Forage Production Alternative

[c] Figures for long term same as those given for short term.

[d] No change from actual use.

[e] Figures for short term same as those given for Proposed Action.

APPENDIX H-8

SUMMARY OF ADJUSTMENTS IN LIVESTOCK AUMs FROM PREFERENCE

	PA[a]		NA		ELG		MLFP		EORV	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
AMPs										
Increases		209[b] (2)[c]						5,515 (8)		
Reductions	8,780 (13)	4,292 (7)	7,202 (15)	Same as NA Short Term			8,780 (13)	3,013 (6)	14,768 (15)	Same as EORV Short Term
Eliminated					24,724 (15)	Same as ELG Short Term				
No. allotments-no change from preference	2	6					2	1		
NON AMPs										
Increases	1,822 (26)	2,751 (29)	454 (7)	Same as NA Short Term			1,822 (26)	8,251 (59)	212 (5)	Same as EORV Short Term
Reductions	31,812 (95)	16,462 (50)	35,477 (116)				31,812 (95)	11,963 (46)	51,508 (116)	
Eliminated	266 (2)	266 (2)			83,647 (123)	Same as ELG Short Term	266 (2)	266 (2)	266 (2)	
No. allotments-no change from preference		42						16		
TOTAL										
Increases	1,822 (26)	2,960 (31)	454 (7)	Same as NA Short Term			1,822 (26)	13,766 (67)	212 (5)	Same as EORV Short Term
Reductions	40,592 (108)	20,754 (57)	42,679 (131)				40,592 (108)	14,976 (52)	66,276 (131)	
Eliminated	266 (2)	266 (2)			108,371 (138)	Same as ELG Short Term	266 (2)	266 (2)	266 (2)	
No. allotments-no change from preference	2	48					2	17		

Source: BLM Planning Documents, 1979.

Notes: [a] PA = Proposed Action; NA = No Action Altervative; ELG = Elimination of Livestock Grazing Alternative; MLFP = Maximimization of Livestock Forage Production Alternative; EORV = Enhancement of Other Resource Values Alternative.
[b] AUM change
[c] Number of allotments involved

APPENDIX H-9

SUMMARY OF ADJUSTMENTS IN LIVESTOCK AUMs FROM AVERAGE LICENCED USE

	PA[a]		NA		ELG		MLFP		EORV	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
AMPs										
Inereases	822 (5)	4,001[b] (10)[c]	No Change	No Change			822 (5)	10,204 (11)		
Reductions	2,400 (10)	882 (5)					2,400 (10)	500 (4)	7,566 (15)	Same as EORV Short Term
Eliminated					17,522 (15)	Same as ELG Short Term				
No. allotments-no change from licensed used										
NON AMPs										
Increases	12,008 (69)	23,443 (96)	No Change	No Change			12,008 (69)	32,821 (102)	3,767 (37)	Same as EORV Short Term
Reductions	7,100 (51)	2,256 (25)					7,100 (51)	1,635 (19)	20,165 (84)	
Eliminated	141 (2)	141 (2)			48,624 (123)	Same as ELG Short Term	141 (2)	141 (2)	141 (2)	
No. allotments-no change from licensed use	1						1			
TOTAL										
Inereases	12,830 (74)	27,444 (106)	No Change	No Change			12,830 (74)	43,025 (113)	3,767 (37)	Same as EORV Short Term
Reductions	9,500 (61)	3,138 (30)					9,500 (61)	2,135 (23)	27,731 (99)	
Eliminated	141 (2)	141 (2)			66,146 (138)	Same as ELG Short Term	141 (2)	141 (2)	141 (2)	
No. allotments-no change from licensed use	1						1			

Source: BLM Planning Document, 1979.

Notes: [a] PA = Proposed Action; NA = No Action Alternative; ELG = Elimination of Livestock Grazing Alternative; MLFP = Maximimization of Livestoek Forage Production Alternative; EORV = Enhancement of Other Resource Values Alternative.
[b] AUM change
[c] Number of allotments involved

APPENDIX I

FORESTRY

APPENDIX I

FORESTRY

APPENDIX I-1

TIMBER LAND INVENTORY

Location (Allotment No.)	Block	Productive[a/] Acres	Non-Productive[b/] Acres	Species[c/] Composition	Estimated[d/] Volume (Mbf)
5050, 5055, 5054, 5052, 5053	North Pump		700	DF - PP	1,025
5056, 5058	Carracas		200	PP - DF	270
5067, 5063, 5001, 5135	La Jara		150	DF - PP	200
5105	Laguna Seca	175	550	PP - DF	1,300
5093, 5105	Munoz		600	DF - PP	975
5083, 5122	Lybrook		650	PP	625
	Total	175	2,850		4,395

Source: BLM Planning Documents, 1979.

Notes: a/ Productive: Acreage estimate of forest land presently producing or capable of producing at least 20 cubic feet of commercial wood products per acre per year on a sustained yield basis.

b/ Non-Productive: Acreage estimate of forest land which is of such low site quality that it is incapable of yielding 20 cubic feet of commercial wood products per acre per year on a sustained yield basis.

c/ PP = ponderosa pine
PP - DF = Primarily ponderosa pine with a mixture of Douglas fir
DF - PP = Primarily Douglas fir with a mixture of ponderosa pine.

d/ Gross volume of merchantable size trees in thousands of board feet (Mbf).

APPENDIX I-2

FORESTED LAND, SAN JUAN PLANNING UNIT

Category	Acres	Description
Timber		
Productive Forest Land (PFL)	175	Capable of producing 20 cubic feet of wood per acre per year and capable of producing timber.
Non-Productive Forest Land (NPFL)	2,850	Producing less than 20 cubic feet per acre per year and capable of producing timber. By definition, most all of the pinyon-juniper (woodlands) fall into this category, but are broken into further classes for clarity.
Woodlands		Occupied primarily by pinyon-juniper that are currently
Commerical Pinyon-Juniper (CPJ)	226,577	available for commercial use. CPJ lands must meet the following criteria: (1) less than 20 percent slope; (2) greater than 35 percent crown density; (3) accessible; and (4) site quality sufficient to be producing currently highly demanded products.
Non-Commercial Pinyon-Juniper (NCPJ)	273,423	These lands consist primarily of scattered P-J stands of shrubby stature or on generally inaccessible slopes.

Source: BLM Planning Documents, 1979.

APPENDIX J

RECREATION

APPENDIX J

RECREATION DEMAND[a/] BY VISITOR-DAYS FOR SELECTED RECREATION ACTIVITIES ON PUBLIC LAND IN THE SAN JUAN PLANNING UNIT

Activity	Year 1978 Present Demand[b/] (Visitor Days)	Year 1990 Estimated Demand[b/] (Visitor Days)	Year 2000 Estimated Demand[c/] (Visitor Days)
Camping	26,682	35,215	42,326
Picnicking	61,420	84,996	104,643
Sightseeing	65,809	78,145	88,425
Visiting/Cultural Historical Sites	26,645	34,364	40,796
Caving	3,114	5,130	6,810
Off-Road Vehicle Use	62,824	76,922	88,670
Hiking	38,915	52,556	63,924
Backpacking	5,128	7,014	8,586
Cross-Country Skiing	1,440	1,955	2,384
Snowmobiling	1,227	2,160	2,938
Boating	29,461	38,275	45,620
Lake or River Swimming	27,792	36,210	43,225
Horseback Riding	142,690	166,788	186,870
Sport Shooting	11,795	13,901	15,656
Rock Hounding	24,106	28,824	32,756
Rock Climbing	13,574	16,206	18,399
Big Game Hunting	52,437	68,903	75,773
Upland Game Hunting	5,761	7,518	8,269
Fishing	2,191	38,462	43,308
TOTALS	603,001	793,544	919,378

Source: BLM Planning Documents, 1979.

Notes: a/ The term demand is used as measurement of participation levels (New Mexico State Planning Office, 1976).

b/ Present and estimated demands for recreation activities were extracted from the BLM San Juan Planning Unit Planning Area Analysis (PAA), (1979).

c/ A constant yearly increase was derived for the 12-year period of 1978 through 1990. The same incremental increase was applied for the period of 1991 to year 2000 to project the estimated demand for the year 2000.

APPENDIX K

VISUAL RESOURCES

APPENDIX K

VISUAL RESOURCES

APPENDIX K

MATRIX FOR DETERMINING VISUAL RESOURCES MANAGEMENT CLASSES

	VISUAL SENSITIVITY						
	high			medium			low
special areas	I [a]	I	I	I	I	I	I
SCENIC QUALITY A	II	II	II	II	II	II	II
SCENIC QUALITY B	II	III	III [b] / IV	III	IV	IV	IV
SCENIC QUALITY C	III	IV	IV	IV	IV	IV	IV
DISTANCE ZONES [c]	fg-mg	bg	ss	fg-mg	bg	ss	ss

Source: Modified from BLM Manual Section 8411, 1978.

Notes: a/ Class I applies only to classified special areas, e.g., Wilderness, Natural Areas, etc. This quality standard is established through legislation or policy.

Class V is not determined through the use of this matrix. It applies to areas identified in the scenic quality inventory where the quality class has been reduced because of unacceptable cultural modifications or areas that have the potential for enhancement.

b/ If the area being evaluated is adjacent to any VRM class III or higher, select class III; if lower, select VRM class IV.

c/ Distance Zones: fg-mg - foreground-middleground
bg - background
ss - seldom-seen

APPENDIX L

SOCIAL AND ECONOMIC CONDITIONS

APPENDIX L

SOCIAL AND ECONOMIC CONDITIONS

APPENDIX L-1

DEPENDENCE ON AUTHORIZED USE OF PUBLIC LANDS IN PLANNING UNIT BY RANCH SIZE GROUP -- 1982 and YEAR 2000, UNDER PROPOSED ACTION

Ranch Type[a]	Size Group[b]	Number of Ranches[c]	1982			Year 2000		
			Number of AUMs[d]	Percent Dependent During Permit[e]	Percent Dependent Yearlong[f]	Number of AUMs[d]	Percent Dependent During Permit[e]	Percent Dependent Yearlong[f]
Cattle	All	199	100,296	57	42	118,902	64	48
	Subsistence	168	32,721	58	49	39,263	65	55
	Small Commercial	17	18,633	53	44	21,309	59	49
	Medium Commercial	8	21,041	58	36	24,824	65	41
	Large Commercial	6	27,901	57	40	33,506	64	45
Sheep	All	61	17,902	66	62	19,734	69	63
All	All	260	118,198	58	45	138,636	64	49

Source: Harbridge House, Inc., 1980.

Notes: [a] In cases of mixed operations, ranch types determined on basis of the type having the largest number of animals. Horses are classified with cattle, goats with sheep.

[b] Size groups are defined as 1-74 AUs (Subsistence), 75-174 AUs (Small Commercial), 175-349 AUs (Medium Commercial), and 350 or more AUs (Large Commercial).

[c] Numbers reflect distribution by size in 1978.

[d] AUMs shown are authorized levels under the proposed action.

[e] Dependence during periods for which permits are issued, up to twelve months.

[f] Dependence on annualized basis.

APPENDIX L-2

TYPICAL COSTS, RECEIPTS, AND RETURNS FOR LIVESTOCK RANCHES USING PUBLIC LANDS IN PLANNING UNIT, BY SIZE -- 1982, UNDER PROPOSED ACTION (In 1978 Dollars)

Budget Item	Cattle Ranches					Sheep Ranches	Average All Types
	Subsistence Size	Small Commercial Size	Medium Commercial Size	Large Commercial Size	Average All Sizes		
Livestock Sales	$1,955	$11,690	$35,480	$67,035	$6,095	$3,820	$5,560
Operating Costs	1,755	9,930	25,980	43,750	4,695	3,400	4,390
Net Cash Income	200	1,760	9,500	23,285	1,405	420	1,170
Ownership Costs[a/]	950	7,555	17,865	34,945	3,220	1,700	2,865
Net Business Income	(750)[b/]	(5,795)	(8,365)	(11,660)	(1,815)	(1,280)	(1,690)
Overhead and Management Costs[c/]	3,380	6,760	8,095	9,275	4,035	5,070	4,280
Final Business Profit	(4,130)	(12,555)	(16,460)	(20,935)	(5,850)	(6,350)	(5,970)
Capital Investment	$23,140	$206,350	$518,610	$1,272,580	$96,380	$68,250	$89,780
Percent Return on Investment	(17.8)	(6.1)	(3.2)	(1.6)		(9.3)	(6.6)

Source: Harbridge House, Inc., 1980.

Notes: a/ Ownership Costs include depreciation of capital investment, insurance, and interest expense.

b/ Parentheses indicate negative values.

c/ Overhead and Management Costs include return to operator for labor at minimum wage, and overhead on business costs.

APPENDIX L-3

TOTAL COSTS, RECEIPTS, AND RETURNS FOR LIVESTOCK RANCHES USING PUBLIC LANDS IN PLANNING UNIT, BY SIZE -- 1982, UNDER PROPOSED ACTION (In 1978 Dollars)

Budget Item	Cattle Ranches					Sheep Ranches	Total, All Types
	Subsistence Size	Small Commercial Size	Medium Commercial Size	Large Commercial Size	Total, All Sizes		
Livestock Sales	$328,440	$198,730	$283,840	$402,210	$1,213,220	$233,020	$1,446,240
Operating Costs	294,840	168,810	207,840	262,500	933,990	207,400	1,141,390
Net Cash Income	33,600	29,920	76,000	139,710	279,230	25,620	304,850
Ownership Costs[a/]	159,600	128,435	142,920	209,670	640,625	103,700	744,325
Net Business Income	(126,000)[b/]	(98,515)	(66,920)	(69,960)	(361,395)	(78,080)	(439,475)
Overhead and Management Costs[c/]	567,840	114,920	64,760	55,650	803,170	309,270	1,112,440
Final Business Profit	(693,840)	(213,435)	(131,680)	(125,610)	(1,164,565)	(387,350)	(1,551,915)
Capital Investment	3,887,795	$3,507,950	$4,148,880	$7,635,480	$19,180,105	4,163,250	23,343,355
Percent Return on Investment	(17.8)	(6.1)	(3.2)	(1.6)	(6.1)	(9.3)	(6.6)

Source: Harbridge House, Inc., 1980.

Notes: a/ Ownership Costs include depreciation of capital investment, insurance, and interest expense.

b/ Parentheses indicate negative values.

c/ Overhead and Management Costs include return to operator for labor at minimum wage, and overhead on business costs.

APPENDIX L-4

TYPICAL COSTS, RECEIPTS, AND RETURNS FOR LIVESTOCK RANCHES USING PUBLIC LANDS IN PLANNING UNIT, BY SIZE -- YEAR 2000, UNDER PROPOSED ACTION (In 1978 Dollars)

Budget Item	Cattle Ranches					Sheep Ranches	Average, All Types
	Subsistence Size	Small Commercial Size	Medium Commercial Size	Large Commercial Size	Average, All Sizes		
Livestock Sales	$2,530	$15,350	$43,285	$88,215	$7,845	$4,290	$7,010
Operating Costs	2,270	12,770	31,285	53,555	5,880	3,805	5,395
Net Cash Income	260	2,580	12,000	34,660	1,965	485	1,620
Ownership Costs[a/]	950	7,555	17,865	34,945	3,220	1,700	2,865
Net Business Income	(790)[b/]	(4,975)	(5,865)	(285)	1,250	(1,215)	1,245
Overhead and Management Costs[c/]	3,380	6,760	8,095	9,275	4,035	5,070	4,280
Final Business Profit	(4,070)	(11,735)	(13,960)	(9,560)	5,290	(6,285)	5,520
Capital Investment	$23,140	$206,350	$518,610	$1,272,580	$96,380	68,250	89,780
Percent Return on Investment	(17.6)	(5.7)	(2.7)	(0.8)	(5.5)	(9.2)	(6.2)

Source: Harbridge House, Inc., 1980.

Notes: [a/] Ownership Costs include depreciation of capital investment, insurance, and interest expense.

[b/] Parentheses indicate negative values.

[c/] Overhead and Management Costs include return to operator for labor at minimum wage, and overhead on business costs.

APPENDIX L-5

TOTAL COSTS, RECEIPTS, AND RETURNS FOR LIVESTOCK RANCHES USING PUBLIC LANDS IN PLANNING UNIT, BY SIZE -- YEAR 2000, UNDER PROPOSED ACTION (In 1978 Dollars)

Budget Item	Cattle Ranches					Sheep Ranches	Total All Types
	Subsistence Size	Small Commercial Size	Medium Commercial Size	Large Commercial Size	Total All Sizes		
Livestock Sales	$425,040	$260,950	$346,280	$529,290	$1,561,560	$261,690	$1,823,250
Operating Costs	381,360	217,090	250,280	321,330	1,170,060	232,105	1,402,165
Net Cash Income	43,680	43,860	96,000	207,960	391,500	29,585	421,085
Ownership Costs[a/]	159,600	128,435	142,920	209,670	640,625	103,700	744,325
Net Business Income	(115,920)[b/]	(84,575)	(46,920)	(1,710)	(249,125)	(74,115)	323,240
Overhead and Management Costs[c/]	567,840	114,920	64,760	55,650	803,170	309,270	1,112,440
Final Business Profit	(683,760)	(199,495)	(111,680)	(57,360)	(1,052,295)	(383,385)	(1,435,680)
Capital Investment	$3,887,795	$3,507,950	$4,148,880	$7,635,480	$19,180,105	4,163,250	23,343,355
Percent Return on Investment	(17.6)	(5.7)	(2.7)	(0.8)	(5.5)	(9.2)	(6.2)

Source: Harbridge House, Inc., 1980

Notes: a/ Ownership Costs include depreciation of capital investment, insurance, and interest expense.

b/ Parentheses indicate negative values.

c/ Overhead and Management Costs include return to operator for labor at minimum wage, and overhead on business costs.

APPENDIX L-6

CHANGE IN AVERAGE HERD SIZES OF RANCHES DEPENDENT ON PUBLIC LANDS
IN PLANNING UNIT -- 1982 AND YEAR 2000, UNDER PROPOSED ACTION

Ranch Type[a]	Size Group[b]	Number of Ranches[c]	Average Herd Size, 1978[d]	1982		Year 2000	
				Average Herd Size, 1982[e]	Percent Change 1978-1982[f]	Average Herd Size, Year 2000[e]	Percent Change 1978-Year 2000[f]
Cattle	All	199	48	48	0	61	27.1
	Subsistence	168	14	17	21.4	22	57.1
	Small Commercial	17	112	98	(12.5)[g]	127	13.4
	Medium Commercial	8	268	267	(0.4)	328	22.4
	Large Commercial	6	525	478	(9.0)	598	13.9
Sheep	All	61	25	33	32.0	36	44.0
All	All	260	43	44	2.3	55	27.9

Source: Harbridge House, Inc., 1980.

Notes: [a] In cases of mixed operations, ranch types determined on basis of the type having the largest number of animals. Horses are classified with cattle, goats with sheep.

[b] Size groups are defined as 1-74 AUs (Subsistence), 75-174 AUs (Small Commercial), 175-349 AUs (Medium Commercial), and 350 or more AUs (Large Commercial).

[c] Numbers reflect distribution by size in 1978.

[d] Average herd size based on actual, reported sizes in 1978; does not reflect unused authorized AUMs.

[e] Average herd size based on authorized levels under the proposed action.

[f] Change shown from actual, not authorized, 1978 averages.

[g] Parentheses indicate negative values.

APPENDIX L-7

CHANGE IN SIZE-GROUP DISTRIBUTION OF RANCHES DEPENDENT ON PUBLIC LANDS
IN PLANNING UNIT -- 1982 AND YEAR 2000, UNDER PROPOSED ACTION

Ranch Type[a]	Size Group[b]	1978		1982		Year 2000	
		Number of Ranches	Percent Distribution by Size Group	Number of Ranches	Percent Distribution by Size Group	Number of Ranches	Percent Distribution by Size Group
Cattle	All	199	100	200	100	201	100
	Subsistence	168	84	166	82	163	80
	Small Commercial	17	9	18	9	20	10
	Medium Commercial	8	4	9	5	9	5
	Large Commercial	6	3	7	4	9	5
Sheep	All	61	100	61	100	61	100
	Subsistence	56	92	55	90	55	90
	Small Commercial	3	5	3	5	1	2
	Medium Commercial	2	3	1	2	3	5
	Large Commercial	0	0	2	3	2	3
All	All	260	100	261	100	262	100
	Subsistence	224	86	221	85	218	83
	Small Commercial	20	8	21	8	21	8
	Medium Commercial	10	4	10	4	12	5
	Large Commercial	6	2	9	3	11	4

Source: Harbridge House, Inc., 1980.

Notes: [a] In cases of mixed operations, ranch types determined on basis of the type having the largest number of animals. Horses are classified with cattle, goats with sheep.

[b] Size groups are defined as 1-74 AUs (Subsistence), 75-174 AUs (Small Commercial), 175-349 AUs (Medium Commercial), and 350 or more AUs (Large Commercial).

GLOSSARY

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ACTIVE (ACTUAL) USE. Grazing privileges which have been paid for and are presently being used. Active use combined with nonuse equals total authorized livestock use. Active use normally is descriptive of federal grazing privileges.

ADJUSTMENTS IN NUMBERS. Change (increase or decrease) of livestock numbers to conform to the amount of forage produced in an area considering other multiple uses.

ALLOTMENT. An area of land designated and managed for grazing of livestock.

ALLOTMENT MANAGEMENT PLAN (AMP). A documented program which applies to livestock operations on the public lands, which is prepared in consultation with the permittee(s) or lessee(s) involved, and which: (1) prescribes the manner in and extent to which livestock operations will be conducted in order to meet the multiple-use, sustained-yield, economic, and other needs and objectives as determined for the public lands through land use planning; and (2) describes the type, location, ownership, and general specifications for the range improvements to be installed and maintained on the public lands to meet the livestock grazing and other objectives of land management and (3) contains such other provisions relating to livestock as may be prescribed by the authorized officer consistent with applicable law.

ALLUVIUM. Unconsolidated sediments which have been transported by water and deposited in stream valleys and other low lying areas.

AMBIENT AIR QUALITY STANDARDS. The maximum concentrations of pollutants allowable for human exposure.

ANIMAL UNIT (AU). Considered to be one mature (1,000 lb.) cow or its equivalent based upon average daily forage consumption of 26 pounds of dry matter per day.

ANIMAL UNIT MONTH (AUM). The amount of forage required to sustain the equivalent of one cow, one horse, two elk, three Barbary sheep, five domestic sheep, five goats, five deer, or ten antelope for one month.

AQUIFER. A stratum of rock which contains and transmits enough to make it a potential source of supply.

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). Areas within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.

ASCETICISM. Renouncement of the comforts of society and leading a life of self-discipline.

ASPECT (VEGETATIVE). The appearnace that a dominant or most common species of vegetation gives to the viewer, i.e., shortgrass, pinyon-juniper, big sagebrush.

AUTHORIZED LIVESTOCK USE. The maximum amount of livestock use which could be licensed or permitted.

CARRYING CAPACITY. The number of a given species of animal that a specific area of land can sustain over a given period of time.

CHARACTERISTIC LANDSCAPE. The character of the landscape is the overall impression created by its unique combination of visual features (such as land, vegetation, water, and structures) as seen in terms of form, line, color and texture.

CONDITION CLASS. One of a series of arbitrary categories used to classify range condition.

CONTROLLED LANDS. Private, state, or any other non-public lands within an allotment that are either owned or leased by the allotment operator.

CONVENTIONAL EMULSION. A mixture of a lipid (i.e. oil) and water in which the lipid is in the dispersed phase and the water is in the continuous phase.

COOL SEASON PLANT. A plant which makes the major portion of its growth during late winter, early spring, and again in the fall (during the cool seasons).

COVER. The proportion of the ground surface under live aerial parts of plants or the combined aerial parts of plants and mulch.

DEFERRED ROTATION GRAZING. Discontinuance of grazing on various parts of range in suceeding years, allowing each part to rest successively during the growing season to permit seed production, establishment of seedlings, or restoration of plant vigor. Two, but usually 3 or more separate pastures are required. Control is usually insured by pasture fencing, but may be obtained by herding.

DENSITY. The number of plants or specific plant parts per unit area of ground surface.

DISTANCE ZONES. The area that can be seen as foreground - middleground, background or seldom seen.

DRIFT. The movement of airborne spray particles.

EPHEMERAL DRAINAGE. A drainage which produces streamflow only in response to storm events.

ESTER FORMULATION. An emulsifiable form of an organic acid compound in which the hydrogen atom of the carboxyl group has been replaced by an alkyl radical.

EXCHANGE OF USE. An agreement made with a licensee having ownership or control of nonfederal land interspersed and grazed in conjunction with surrounding federal range. This agreement specifies the carrying capacity and gives the Bureau control of the nonfederal land for grazing purpose.

FEDERALLY REGISTERED HERBICIDES. Herbicides whose current label lists as allowable the use being considered and has been approved by the Environmental Protection Agency.

FORAGE (COMPETITIVE). Plants which are used by large herbivores such as cattle and large and small wildlife.

FORB. Any herbaceous plant other than those in the Gramineae, Cyperaceae, and Juncaceae families.

GRAZING CAPACITY. The maximum livestock stocking rate possible without inducing damage to vegetation or related resources such as watershed. This incorporates such things as suitability of the range to grazing as well as proper use which can be made on each and all the plants within the area. Normally expressed in terms of acres per animal unit month (AC/AUM) or sometimes referred to as the total AUMs that are available in any given area such as an allotment. Areas that are unsuitable for livestock use are not computed in the grazing capacity. This may or may not be the same as the stocking rate.

GRAZING PREFERENCE. The total number of animal unit months of livestock grazing on public lands apportioned and attached to base property owned or controlled by a permittee or lessee.

GRAZYING SYSTEM. A systematic sequence of grazing use and nonuse of an allotment to reach identified multiple-use goals or objectives by improving the quality and quantity of the vegetation.

INVERT EMULSIONS. A mixture of a lipid (i.e. oil) and water in which the lipid is in the continuous phase and the water is in the dispersed phase.

KIND OF LIVESTOCK. Kinds of domestic livestock grazing on a range; cattle, horses, sheep or goats, or a combination of these. May be broken down to greater detail such as cows with calves, yearlings, steers, ewes, ewes with lambs, etc.

LOW-VOLATILE ESTER. An ester for which the loss from vapor dispersion is limited. For 2,4-D, this would be an ester form in which the alkyl radical contains more than five carbon atoms.

NONUSE. Grazing privileges which are not presently being used. The nonuse combined with the active use equals the total authorized livestock use. Nonuse normally is descriptive of federal grazing privileges.

PASSERINE. Pertains to birds of the order Passeriformes (warblers, thrushes and their allies).

PERENNIAL STREAM. A stream which flows year-round.

PERIOD OF USE. The times of the year when domestic animals would be allowed to graze on a specific unit of range, as designated by license.

PLANT COMPOSITION. The relative proportions of various plant species in the total cover on a given area.

PREFERENCE (ADJUDICATED GRAZING PRIVILEGES). That amount of forage production on a particular unit of federal range that is apportioned to range users following a formal process that includes application by the users for grazing privileges, determination to the qualifications for grazing privileges of the applicants, apportionment among applicants of the forage production within the proper grazing season and capacity of that unit of federal range, and acceptance by the applicants of the grazing privileges based upon the apportionment or its substantiation in a decision by an examiner or the Board of Land Appeals upon appeal.

PROPER USE FACTOR (PUF). Represents the average weight percentage of a particular plant species, in relation to all other species, that can be safely grazed without restricting forage capacity production.

RANGE CONDITON (ECOLOGICAL). The present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site. Range condition is basically an ecological rating of the plant community. Four classes are used to express the degree to which the composition of the present plant community reflects that of the climax. They are:

Range condition class	Percentage of present plant community that is climax for the range site
Excellent	.76-100
Good	.51-75
Fair	.26-50
Poor	0-25

RANGE CONDITION TREND. The direction of change in range condition.

RANGE TREND. See range condition trend.

RECREATION ACTIVITIES. Indoor or outdoor actions engaged in as part of the recreation experience. As such, they may be relatively structured or they may be characterized by their informality, i.e., hunting, fishing, and many others.

REGULATED POLLUTANTS. Pollutants whose maximum allowable concentrations or emission rates are limited by law.

REINVASION. The migration of organisms from one area to another which they had formerly occupied.

RIPARIAN. Pertaining to, or living on, the bank of a river or lake.

SELECTIVE HERBICIDE. A herbicide that is more toxic to one plant than to another.

SHRUB. A plant that has persistent, woody stems and a relatively low growth habit, and that generally produces several basal shoots.

STOCKING RATE. The area of land that the operator has allowed to each animal unit for the entire grazeable period of the year. May be expressed as a ratio such as AU/section/ acres/AU or acres/AUM.

STRESS. The sum of external pressures on a given species of animal.

TOTAL SUSPENDED PARTICULATES. Matter, either solid or liquid, dispersed in the atmosphere.

UNALLOTTED LANDS. Lands which currently are not committed to livestock grazing use.

UNCONTROLLED LANDS. Private, state, or any other non-public lands within an allotment that are not owned or leased by the allotment operator.

UTILIZATION. The proportion of current year's forage production that is consumed or destroyed by grazing animals, usually expressed as a percentage.

VEGETATION COMPOSITION. The proportion of the total vegetation density or weight provided by each species, expressed in percent.

VIGOR. The state of health of a plant. The capacity of a plant to respond to growing conditions, to make and store food, produce food, produce seed, or reproduce vegetatively, that is, by stolons or rhizomes.

VISITOR-DAY. Twelve visitor-hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons. Visitor-days may occur either as recreation visitor-days or as non-recreation visitor-days.

VISUAL RESOURCE. The land, water, vegetation, animal, and other features that are visible on all lands (scenic values).

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES. Classifications containing specific objectives based upon physical characteristics, social characteristics and distance zones of a given homogeneous area for maintaining or enhancing visual resources.

VOLATILITY. The tendency of a material to vaporize or give off fumes.

WARM SEASON PLANT. A plant which makes most or all of its growth during the spring, summer or fall and is usually dormant in winter.

WILDERNESS. The definition contained Section 2(c) of the Wilderness Act of 1964 is as follows: "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. Wilderness is an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, education, scenic, or historical value.

WILDERNESS INVENTORY UNIT. Areas or islands of public lands indexed for easy reference at the start of the wilderness review process. These units may or may not be roadless.

WILDERNESS STUDY AREA (WSA). A roadless area or island that has been inventoried and found to have wilderness characteristics as described in section 603 of FLPMA and section 2(c) of the Wilderness Act of 1964 (78 Stat. 891).

REFERENCES

REFERENCES

Aldon, E. F. December, 1964. Ground Cover changes in relation to run off and erosion in West-Central New Mexico. Research Note RM-34. Rocky Mtn. Forest & Range Experiment Station. Albuquerque, N. Mex.

Aldous, A. E. 1930. Relation of organic food reserves to growth of some Kansas pasture plants. Journal Amer. Soc. Agron. 22:385-392.

Anderson, L. D. and Denton, J. W. 1979. Base data analysis required for forage allocation. Bureau of Land Management, Technical Note, 11-22-1979.

Aro, R. S. 1971. Evaluation of pinyon-juniper conversion to grassland. Journal of Range Management 24:188-197.

Ash, S., Lucas, S., and Tidwell, D. 1979. Paleontological survey of the San Juan Planning Unit and the Rio Puerco Resource Area. Inter-Mountain Research, Provo, Utah, Rept. to Bureau of Land Management, Albuquerque, N. Mex. District Office.

Beck, W. A. 1962. New Mexico: A history of four centuries. Norman, Okla.

Clary, W. P. 1971. Effects of Utah juniper removal on herbage yields from Springerville soils. Journal of Range Management24:373-378.

Cornelius, D. R. and Graham, C. A. 1951. Selective herbicides for improving California forest ranges. Journal of Range Management 4: 95-100.

Dahl, B. E., Sosebee, R. E., Fish, E. B. and Goen J. P. 1976. Range plant and range ecosystem studies applicable to the Rio Puerco Area, New Mexico. A report by Range Management Personnel at Texas Tech University, under contract to Bureau of Land Management, Albuquerque, N. Mex.

DeBloois, E. I., Green, D. F. and Wylie, H. G. May 1975. A test of the impact of pinyon-juniper chaining on archaeological sites. U.S. Forest Service Archaeology Laboratory, Ogden, Utah. Paper presented at the Pinyon-Juniper Ecosystem: a symposium, sponsored by Utah State University and Utah Agricultural Experiment Station, Logan, Utah.

Earth Environmental Consultants, Inc. 1978. Study of Sediment Yields in the San Juan Planning Unit. Prepared for Bureau of Land Management, Albuquerque, N. Mex.

Eastman, Clyde and Romanek, Cheryl. 1975. New Mexico's natural communities: implications for government and development. New Mexico Agricultural Experiment Station Bulletin. Las Cruces, N. Mex.

Federal Trade Commission. 1973. The trading post system on the Navajo Indian Reservation. Washington, D.C.

Fleigel, F. 1976. A comparative analysis of the impact of industrialization on traditional values. Presidential address to the Rural Sociological Society annual meeting. New York, N. Y.

Grandfield, C. O. 1930. The relation of organic food reserves to the effect of cutting pasture weeds at different stages of growth. Journal Amer. Soc. Agron. 22:709-713.

Grubb, T. G. 1979. Wintering bald eagle studies in N. Mex. 1979. Report by the U.S. Forest Service, Rocky Mtn. Forest and Range Experiment Station, Tempe, Ariz. for the Bureau of Land Management, Santa Fe, N. Mex.

Harbridge House Inc. 1980. Ranching in the San Juan Basin. Denver, Colo.

Hedrick, D. W. 1958. Proper utilization--a problem in evaluating the physiological response of plants to grazing use: a review. Journal of Range Management 11:34-43.

Hubbard, J. P., et. al. 1979. Handbook of species endangered in New Mexico. Santa Fe: New Mexico Department of Game and Fish.

Hughes, L. E. 1980. Six grazing exclosures with a message. Rangelands 2:17-18.

Hull, A. C. and Vaughn, W. T. 1951. Controlling big sagebrush with 2,4-D and other chemicals. Journal of Range Management 4:158-164.

Huse, Hannah, Noisat, B. A. and Halasi, J. A. 1978. The Bisti-Star Lake Project -- a sample survey of cultural resources in northwestern New Mexico. Cultural Resources Series No. 1. Albuquerque: BLM Albuquerque, N. Mex.

Hyder, Donald N. 1953. Controlling big sagebrush with growth regulators. Journal of Range Management 6:109-116.

Hyder, D. N. and Sneva, F. A. 1959. Growth and carbohydrate trends in crested wheatgrass. Journal of Range Management. 12:271-276.

Jober, Patrick C. July, 1979. Ranchers as an endangered species. Journal of Range Management.

Johnson, W. M. 1953. Effects of grazing intensity upon vegetation and cattle gains on ponderosa pine-bunchgrass range of the front range of Colorado. U.S. Department of Agriculture. Circ. 929.

Johnson, W. M. 1969. Life expectancy of a sagebrush control in central Wyoming. Journal of Range Management 22:177-182.

Klingman, Glen C. 1961. Weed Control: As A Science. John Wiley and Sons, Inc. New York, N. Y.

Klipple, G. E and Bement, R. E. 1961. Light grazing - is it economically feasible as range-improvement practice. Journal of Range Management 14:57-62.

Klipple, G. E. and Costello, D. F. 1960. Vegetation and cattle responses to different intensities of grazing on short-grass ranges of the Central Great Plains. U.S. Department of Agriculture. Tech. Bulletin 1216.

Koogler, C. V. and Whitney, V. K. 1972. Aztec: A story of old Aztec from the Anasazi to statehood. Fort Worth, Tex.

Launchbaugh, J. L. 1957. The effect of stocking rate on cattle gains and on native shortgrass vegetation in west-central Kansas. Kansas Agricultural Experimental Station Bulletin 394.

Lusby, Gregg C. 1979. Effects of grazing on runoff and sediment yield from desert rangeland at Badger Wash in Western Colo. 1953-1973. U.S. Geological Survey WSP 1532-1.

Lyford, F. P. and Frenzel, P. F. 1978. Ground water in the San Juan Basin, New Mexico and Colorado: the existing environment. Working paper No. 23. San Juan Basin Regional Uranium Study. U.S. Department of the Interior, Geological Survey, prepared in cooperation with the New Mexico Bureau of Mines and Mineral Resources and the New Mexico State Engineer.

Mac Donald, E. D. and Avrington, J. B. 1970. The San Juan Basin: my kingdom was a county. Denver, Colo.

Magers, Pamela C., edit. 1979. Class I cultural resources inventory of the Chaco, San Juan, and portions of the Cabezon Planning Units. Report no. 289. Las Cruces: Cultural Resources Management Division, Dept. of Sociology and Anthropology, New Mexico State University. Prepared for the BLM, Albuquerque, N. Mex.

Martin, N. L., Welsh, S. L., Faulkner, D. P., Peabody, F. J., Sears, W. E., Martin, J. A. and Yeomans, T. G. 1978. A study of the threatened and endangered plants of the San Juan-Chaco area of N. Mexico. Prepared for the Bureau of Land Management, Albuquerque, N. Mex.

Meinig, D. W. 1971. Southwest: three peoples in geographic change, 1600 to 1970. New York, N. Y.

Nagel, G. S. December, 1974. Economics of the reservation. Current History.

National Oceanic and Atmospheric Administration, Environmental Data Center. 1950-1978. Climatological Data, New Mexico (monthly reports and annual summaries). Vols. 54-82. Asheville, N. C.: National Climate Center.

New Mexico Interagency Range Committee. 1967. Improving sagebrush ranges in N. Mex. Report no. 1.

New Mexico State Planning Office, New Mexico. 1976. Outdoor Recreation, A Comprehensive Plan for New Mexico. Santa Fe, N. Mex.

Pechanec, J. F., Plummer, A. P., Robertson, J. H., and Hull, Jr., A. C. 1965. Sagebrush control on rangelands. U. S. Department of Agriculture. Agricultural Handbook no. 277.

Pechanec, J. F., Stewart, G., Plummer, A. P., Robertson, J. H. and Hull, Jr., A. C. 1954. Controlling sagebrush on rangelands. U. S. Department of Agriculture Farmers' Bulletin no. 2072.

Peryam, J. S. and Olson, C. E. 1975. Impact of potential changes in BLM grazing policies on west central Wyoming cattle ranches. Wyoming Agricultural Experiment Station Research Journal. Laramie, Wyo.

Pingrey, H. B. and Dortignac, E. J. 1959. Economic evaluation of seeding crested wheatgrass on northern New Mexico rangeland. New Mexico Agricultural Experiment Station Bulletin no. 433.

Pioneer Association of San Juan County, New Mexico. 1976. Bulletin. Farmington, N. Mex.

Pond, Floyd W. 1960. Vigor of Idaho fescue in relation to different grazing intensities. Journal of Range Management 13:28-30.

Radian Corporation. 1977. Regional assessment of air quality, final report. Prepared for the Bureau of Land Management, Albuquerque District Office. Austin, Tex.

_____. 1978. Addendum to the assessment of air quality for the Star Lake-Bisti regional coal environmental statement. Prepared for the Bureau of Land Management, Albuquerque District Office. Austin, Tex.

Reardon, P. O., and Merrill, L. B. 1976. Vegetative response under various grazing systems in the Edwards Plateau of Texas. Journal of Range Management 29:195-198.

Reynolds, H. G., and Martin, S. C. 1968. Managing grass-shrub cattle ranges in the southwest. U. S. Department of Agriculture. Agricultural Handbook no. 162.

Simanton, J. R., Osborn, H. B. and Renard, K. G. 1978. Effects of brush to grass conversion on the hydrology and erosion of a semiarid southwestern rangeland watershed.

Smith, A. H. and Martin, W. E. May, 1972. Socioeconomic behavior of cattle ranchers with implications for rural community development in the west. American Journal of Agricultural Economics.

Sneva, Forrest A. 1972. Grazing return following sagebrush control in eastern Oregon. Journal of Range Management 25: 174-178.

Springfield, H. W. 1976. Characteristics and management of southwestern pinyon-juniper ranges: the status of our knowledge. U. S. Department of Agriculture, Forest Service Research Paper RM-160.

State of New Mexico. 1976. Ambient air quality data summaries 1973-1976. Air Quality Division, Environmental Improvement Agency. Santa Fe, N. Mex.

_____. 1977. Air quality section annual report 1977. Health and Environmental Department, Environmental Improvement Division. Santa Fe, N. Mex.

Steel, R. G. D. and Torrie, J. H. 1960. Principles and procedures of statistics. McGraw-Hill Book Company, Inc., New York, N.Y.

Stone, W. B. and Mizell, N. H. 1978. Basic subsurface data compiled for hydrogeologic study of the San Juan Basin, Northwest New Mexico. New Mexico Bureau of Mines and Mineral Resources. Open-File Report 89.

Tabler, Ronald D. 1968. Soil moisture responses to spraying big sagebrush with 2,4-D. Journal of Range Management 21: 12-15.

Thilenius, J. F. and Brown, G. R. 1974. Longterm effects of chemical control of big sagebrush. Journal of Range Management 27: 223-224.

Vanvig, Andrew. 1975. Financing livestock operations. Paper presented to the Wyoming Stockgrowers Association annual meeting. Casper, Wyo.

Vogt, E. Z. 1955. Modern homesteader: the life of a twentieth century frontier community. Cambridge, Mass.

Weed Science Society of America. 1979. Herbicide Handbook. Fourth Edition. Champaign, Ill.

Weinmann, H. 1961. Total available carbohydrates in grasses and legumes. Herb. Abs. 31:255-261.

Widdison, J. G. October, 1959. Historical geography of the Rio Puerco Valley, New Mexico. New Mexico Historical Review.

Witherspoon, Gary. February, 1970. A new look at Navajo social organization. American Anthropologist.

U.S. Department of Agriculture, Forest Service. 1972. San Luis Watershed Study Data. Rocky Mountain Forest Experimental Station, Fort Collins, Colorado. Unpublished report on file at the BLM Albuquerque District Office.

_____, Forest Service. 1977. National Forest Landscape Management. Volume 2 Chapter 3, Range Agriculture Handbook No. 484. Washington, D.C.

_____, Soil Conservation Service. 1972. National Engineering Handbook, Section 4, Hydrology.

_____, Soil Conservation Service, New Mexico State Office. 1977. Soil survey of San Juan County, N. Mex. Preliminary draft. Albuquerque, N. Mex.

U.S. Department of the Interior, Bureau of Indian Affairs. 1976. Final environmental statement: Navajo Indian Irrigation Project. Washington, D.C.

_____, Bureau of Indian Affairs. 1979. Uranium development in the San Juan Basin region: a report on environmental issues (draft). Albuquerque, N. Mex.

_____, Bureau of Land Management. 1968. Manual Section 4413. Washington, D.C.

_____, Bureau of Land Management. 1972. Manual Section 7120. Washington, D.C.

_____, Bureau of Land Management. 1975. Manual Section 1737. Washington, D.C.

_____, Bureau of Land Management. 1978. Manual Section 8431. Washington, D.C.

_____, Bureau of Land Management. 1978a. Upland Visual Resource Inventory and Evaluation. Manual no. 8411. Washington, D.C.

_____, Bureau of Land Management. 1978b. Wilderness Inventory Handbook. Washington, D.C.

_____, Bureau of Land Management. 1979a. Areas of Critical Environmental Concern: Intent to Prepare Policy and Procedures Guidelines. Federal Register Vol. 44, No. 110. 79-6.

_____, Bureau of Land Management. 1979b. Final Interim Management Policy and Guidelines for Lands Under Wilderness Review. Washington, D.C.

_____, Bureau of Land Management. 1979c. Management Framework Plan: San Juan Planning Unit. Albuquerque, N. Mex.

_____, Bureau of Land Management. 1979d. Planning Area Analysis: San Juan Planning Unit. Albuquerque, N. Mex.

_____, Bureau of Land Management. 1979e. Star Lake-Bisti Regional Coal. FES 79-11. Washington, D.C.

_____, Bureau of Land Management. 1979f. Unit Resource Analysis: San Juan Planning Unit. Albuquerque, N. Mex.

_____, Bureau of Land Management, Albuquerque District. 1980. Aluquerque District Intensive Wilderness Inventory. Albuquerque, N. Mex.

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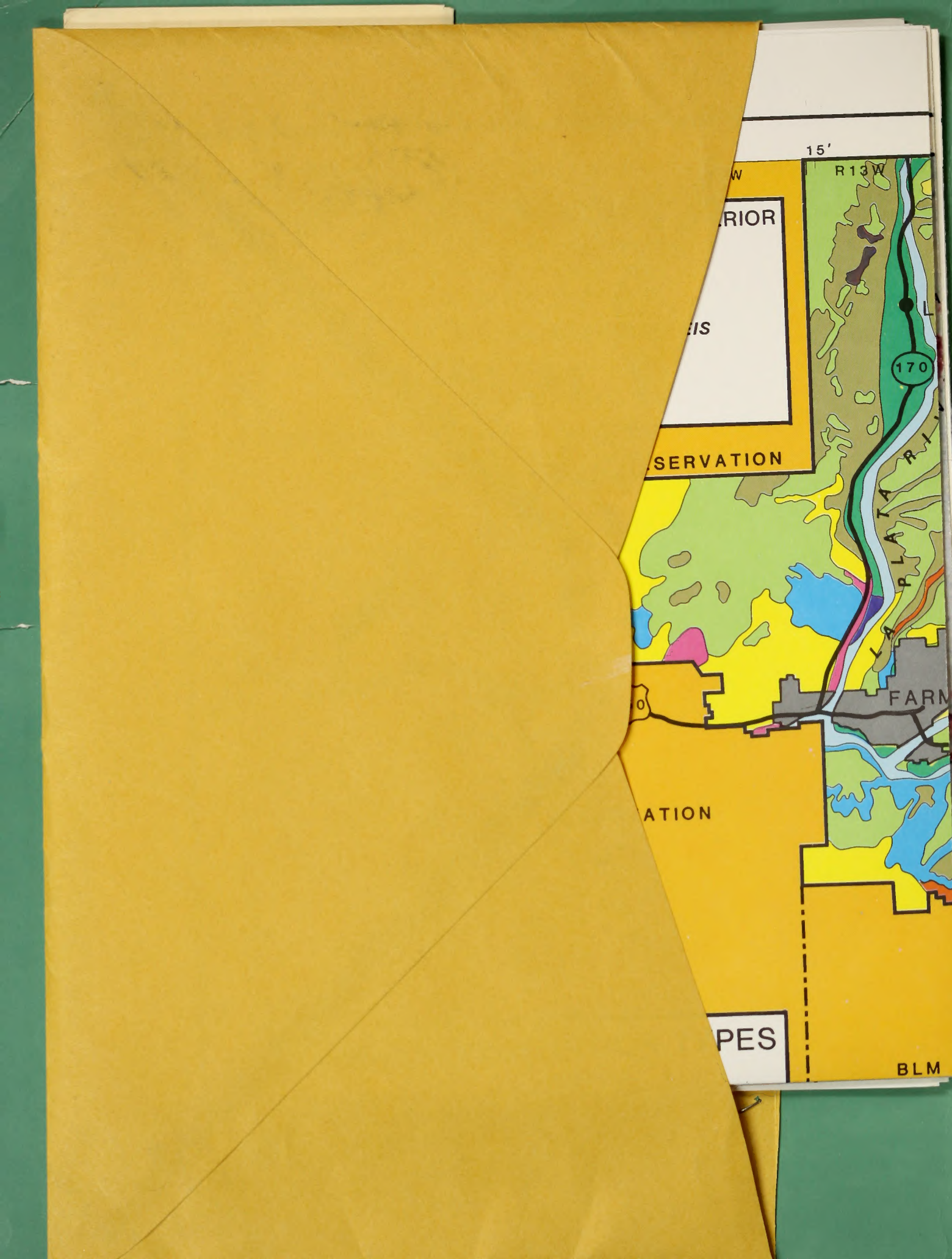
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NAVAJO DAM
HUERFANO TRADING POST
OTIS
NAGEEZI
LYBROOK
COUNSELOR
ANGEL PEAK
SANTOS PEAK
SNYDER PEAK

LA PLATA RIVER
ANIMAS RIVER
LOS PINOS RIVER
SAN JUAN RIVER
KUTZ CANYON
GALLEGOS CANYON
BLANCO CANYON
GOBERNADOR CANYON
CEREZA CANYON
CANYON LARGO

170 · 550 · 64 · 44

LAND STATUS

- PUBLIC LANDS ADMINISTERED BY BLM
- BUREAU OF RECLAMATION
- STATE
- INDIAN
- PRIVATE

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UTAH · COLO. · KANS. · OKLA. · ARIZ. · NEW MEXICO · TEXAS · MEXICO

SAN JUAN PLANNING UNIT
SANTA FE
ALBUQUERQUE

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BLOOMFIELD

LA PLATA RIVER

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GOBERNADOR CANYON

KUTZ CANYON

BLANCO CANYON

CEREZA CANYON

LARGO CANYON

EXISTING RANGE DEVELOPMENTS

- 52 ALLOTMENT NUMBER [1]
- NOT ALLOTTED
- DIRT TANK
- WINDMILL
- SUMP
- SPRING
- WELL
- DRINKER
- FENCE
- PIPELINE
- CORRAL
- ALLOTMENT BOUNDARY

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GALLEGOS CANYON

KUTZ CANYON

GOBERNADOR CANYON

BLANCO CANYON

CEREZA CANYON

LARGO CANYON

PROPOSED RANGE DEVELOPMENTS

- 10 ALLOTMENT NUMBER [1]
- NOT ALLOTTED
- CHAIN ONLY
- CHAIN & SEED
- PLOW & SEED
- SEED ONLY
- INVERTED UMBRELLA
- SPRING DEVELOPMENT
- SLICK ROCK CATCHMENT
- WATERWELL W/ WINDMILL
- WATERWELL W/ELECTRIC PUMP
- DRINKER
- PIPELINE
- FENCE
- CATTLEGUARD
- SUMP
- DIRT TANK
- STORAGE
- ALLOTMENT BOUNDARY

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SANTOS PEAK

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KUTZ CANYON

GEREZA CANYON

ANGEL PEAK

LARGO CANYON

BLANCO CANYON

HUERFANO TRADING POST

OTIS

NAGEEZI

LYBROOK

COUNSELOR

GENERAL TERRAIN

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In general, bright red indicates areas of deciduous vegetation, dull red indicates areas of coniferous forest, and light brown indicates sagebrush and grasslands.

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SANTA FE

ALBUQUERQUE

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NAVAJO RESERVOIR

NAVAJO DAM

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KUTZ CANYON

GOBERNADOR CANYON

CANYON CEREZA

LARGO CANYON

BLANCO CANYON

170 · 550 · 64 · 44

MAJOR VEGETATION TYPES

- GRASSLAND
- SAGEBRUSH
- TREATED SAGEBRUSH
- SEEDED SAGEBRUSH
- SHADSCALE
- GREASEWOOD
- PINYON-JUNIPER
- TREATED PINYON-JUNIPER
- SEEDED PINYON-JUNIPER
- STEEP & ROCKY
- BARREN
- CROPLAND
- SURFACE WATER & ADJACENT FLOODPLAIN

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